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Market Sentiment Is Backward

Uncertainty More Apparent Despite Continued High Rate of Underlying Demand—Steel Corporation Near Maximum Capacity—Independent Plants, Less Favorably Booked, Cut Down Production Slightly—Lower Iron Ore Prices in Sight

ACTUAL business in steel as registered by mill production and deliveries apparently is better than the sentiment that surrounds it. This anomalous situation seems to arise from a mixture of marked conservatism in discounting future conditions of trade with a feeling of uncertainty whether industrial activities can be sustained at their present high rate. The market is lacking that vigorous tone that usually is associated with demands so large. More and more, the political situation at Washington is ascribed as a cause of disturbed confidence. This week has seen new buying of steel kept even closer under check than has been the case for some weeks past.

Some of the independent plants have felt obliged to drop active capacity here and there but the net result is small. Several open-hearth furnaces have been put out at Youngstown, Pittsburgh and elsewhere. Against this slight downturn in independent operations is the strong maintenance of their remarkable record of production by Steel corporation plants. Last week the leading producer ran at nearly 97 per cent of ingot capacity after having approached 98 per cent the previous week which fixed the recent high point.

Expectations of lower automobile production in the coming months are more general. Steel producers count on shipping less tonnage to the automotive industry during the second quarter than they did during the first three months this year. The recent high production by builders appears to be taxing the facilities for storing cars for the spring market. Most automobile plants are buying steel only for a short time ahead. The Ford Motor Co. has been figuring on 15,000 tons of automobile sheets.

Lower Ore Expected

Lower prices on iron ore for next year are strongly indicated, with the market likely to be opened at any time. The 250,000-ton inquiry from the Ford Motor Co. is the object of sharp competition and some representative producers have sought this business with prices under last year's schedule. Some quotations made in the market are understood to be 50 cents below the 1923 level.

For the fifth consecutive week IRON TRADE REVIEW composite of fourteen leading iron and steel products has declined. The index now is at $43.13 against $43.25 last week.

Rail Needs Lead

Railroad requirements still overshadow all others under present conditions. According to high authority in the industry the railroads are taking 40 per cent of the output of the mills at present which is 8 to 10 per cent higher than normally. Rail buying has been more prominent this week with new equipment orders few. The Great Northern bought 25,000 tons and the Missouri Pacific 10,000 tons which is additional to previous orders. The Detroit, Toledo & Ironton took 8000 tons of old rails.

The sharp contrast between buying and consuming demand is apparent in pig iron. Though production is high many furnaces are shipping more iron than they are making, drawing upon stocks to fill all needs. Yet Pittsburgh and other districts report the market the quietest in several years. Prices are untested. Jackson county silveries have been reduced $1 per ton. Foreign low phosphorus is offered at Pittsburgh below valley iron.

Steel prices are more irregular. Sheets are not as firm as several weeks ago as the mills are looking about for second quarter tonnage. In some districts steel bars are selling down to 2.30c Pittsburgh. The more liberal discounts on wire fence have been extended to barb wire and staples.

The scrap market appears demoralized with prices still falling and consumers turning back any surplus shipments.

Large Jobs Offered

Some large tonnages of construction work are included in the week's record. The 18,500 tons for the Philadelphia-Camden bridge has gone to the American Bridge Co. Other important bridge jobs are up including 16,000 tons for spans at Crockett, Cal., 8000 tons at Newark Bay and 5000 tons at Portland, Ore. Ft. Worth, Tex. is taking bids on a riveted pipe line requiring 25,000 tons. The week's building steel awards total 41,991 tons.

A producer in Normandy, France, has sold an American buyer 1500 tons of billets at $26.84 works. Other foreign sales to this country have declined.

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Market Reports Brought to the Reader

ONE of the many advantages of reading iron and steel market reports in Iron Trade Review lies in the fact the reports are grouped according to the products to which they pertain, and not according to the cities of their origin. If you are interested in the structural steel market, for example, is it not easier, and

Foundry Distributes Cost on Each Job. Page 853

timesaving, to read the structural steel reports from various cities when they are assembled under one heading? Or, you may want the facts with respect to the pig iron markets. Are they not better obtained where there is system and continuity in their presentation? Grouping according to products makes for simplicity. Confusion is avoided by a process of sifting; a long journey on your part is unnecessary; the reports you are interested in have been brought to you.

Do You Know That—

307 locomotive builders, car builders, car wheel and railroad equipment manufacturers are regular subscribers to IRON TRADE REVIEW?

Dullest Week in Years Experienced in Pittsburgh Iron Trade—Prices Fairly Stable, While Shipments Exceed Production

PITTSBURGH, March 25.—The pig iron market is quieter than in any prior time in the last four years. The Colonial Steel Co. has purchased 500 tons of basic slightly below $22. This is the minimum price maintained by valley merchant producers. One is quoting $22.50. The purchase is understood to involve iron held by brokers. One inquiry for 1000 tons for a valley user still is current. Bessemer sales are confined to one or two single carloads at $23 and $23.50, valley. The Crucible Steel Co. has entered the market for 200 tons, for its La Belle Works. Inquiries for foundry iron are particularly meager. A single car of No. 2 iron brought $23.50, valley. No. 2 plain is quoted at $23. This grade in middle hands is available at $22, valley. The A. M. Byers Co. bought a portion of its 600-ton inquiry for forge iron put out last week, paying $22.50 for 400 tons from a valley producer. M. A. Hanna Co. is undecided whether the Dover furnace will be operated during the second quarter. The Struthers Furnace Co. is to blow out its stack May 1. Specifications are up to the minute on first quarter iron. Second quarter output in several cases is 75 per cent obligated. Melters are taking in all shipments on contracts. Foreign low phosphorus iron is offered here at $26, seaboard, or $30.66 delivered, against a valley delivered price of $30.76. Small lots of the latter sell readily in preference to the imported material. There is no demand for malleable.

Market Remains Dull

Cleveland March 25.—Very little action is apparent in the pig iron market. While there is no indication when buying will be resumed furnace interests express confidence, and in the meantime they are shipping about one-third more iron than they are making. Some of them are reducing stocks rapidly. They say there is no incentive for reducing prices, as business is not now in sight, and they are almost certain to experience another buying movement in the near future. Sales for Cleveland delivery continue to be made at $24, furnace, and small lots taken at this price brought the total for the week to around 1000 tons. For outside delivery $23, furnace, is the quotable level. A leading merchant interest quotes $23, valley, and $22, Buffalo, and has taken some small lots at these prices. While these figures are the same as a week ago, the market is quieter, and a real test is lacking. Sales by one of the largest interests, with furnaces in a number of districts, amounted approximately to 2000 tons. One lake furnace did not book any iron during the week. A total of 5000 tons for all the furnaces represented in the northern Ohio group is a maximum estimate. No basic iron was closed during the week. Jackson county silvery iron and bessemer ferrosilicons have been reduced $1; 7 to 8 per cent silveries being quoted at $31, and 10 to 11 per cent bessemer ferrosilicon $41.50. Only one inquiry of importance is pending, that being for 1000 tons of foundry grades for a northern Ohio consumer.

Buying at Low Point

Boston, March 25.—Except for 1000 tons purchased by a western Massachusetts manufacturer, pig iron sales are limited to carload lots. The total is lower than for any week so far this year. Prices continue soft in eastern Pennsylvania, but firm in other producing districts. Buffalo furnaces are holding to $22, furnace, or $26.91, delivered, and a few sales have been made at this level. Virginia iron is not a factor in this market on account of its high price and the same is true of Alabama iron. In eastern Pennsylvania competition is keen and prices as low as $21.50 have been made for the base grade. For the base grade $22 eastern Pennsylvania or $25.65 delivered New England is a general figure today.

Eastern Sales Small

New York, March 25.—Pig iron sales in this territory during the past week did not exceed 2000 tons. New inquiries involved 4000 to 5000 tons, principally for nearby and second quarter shipment, although one calls for 600 tons of foundry iron for the third quarter. Several eastern makers are adhering to $23, base furnace, but the market generally on eastern foundry may be quoted at $22.50 to $23, base furnace.

Sales Made at Buffalo

Buffalo, March 25.—Pig iron inquiries aggregate 15,000 tons. A Cortland, N. Y., concern was asking for 3000 tons of basic, and may have closed. An inquiry for 2000 tons of foundry iron came from Ohio and a 1000-ton lot also is up for consideration. Sales are light. The Gould Coupler Co.'s order for 2000 tons of basic is said to have been split between two makers, and 1000 tons of malleable was placed with a third. Price cutting on the larger orders has been general. Sizable tonnages have been placed at $21 to $22, though small orders cannot be placed under $22. Since these larger orders have been placed the market is firmer.

Busy on Contracts

Cincinnati, March 25.—The market for foundry iron is dull, and the undertone is easier. Several of the southern Ohio producers have orders on their books which will keep them busy for several weeks, and fair shipments are being made on contracts. Several furnaces have stocks from which they are shipping on current orders. Inquiries now in the market from consumers in this territory probably are for less than 1500 tons, in the aggregate. The Toledo Steel Castings Co., Toledo, is inquiring for 400 tons of low phosphorous iron, while a melter at Dayton, O., wants 200 tons of northern iron. Prices are unchanged, although their position is relatively weak. The market on northern iron ranges from $23.50 to $24, Ironton base, while southern iron is quoted at $22.50 to $24, Birmingham base. The $22.50 quotation applies to the products of Tennessee furnaces. Recent sales in this territory range from a carlot to several hundred tons. The Lima Locomotive Works, Lima, O., bought 1000 tons of foundry iron.

Fundamental Factors Sound

Chicago, March 25.—Underlying factors in the Chicago pig iron market continue to outweigh unfavorable ones, but general business uncertainty is having an effect. Inquiries are smaller and less numerous, but March shipments probably will equal February's. Foundries on automotive work are experiencing a slight letdown, but this slack is about taken up in distribution of car work. Weakness in the consuming end of the business is more sentimental than actual. The price situation is confusing. Resale iron offered at $24 now has practically disappeared. The gen-

eral quotation on northern malleable and foundry irons continues $24.50, furnace. The outlook is that furnaces must go lower, and consumption decline considerably before these factors cause a reduction. Whether more resale iron will come out and in sufficient quantity to force a cut is a question. A large percentage of second quarter iron has been booked at $24.50. A Sheffield, Ala., furnace continues to meet northern competition with barge iron taking a freight rate of $4.18 into the Chicago district. Birmingham producers probably will meet the situation. The Sheffield cut has not been productive of much business, though the sale of 200 tons to ent. Low phosphorus iron sales consisted of only a few hundred tons of copper-bearing grade which continues to be quoted around $27, furnace.

Market Is Easier

St. Louis, March 25.—Pig iron sales during the last few days have amounted to less than 2500 tons. A decidedly easier tone has developed. Continued heavy production is increasing furnace stocks. The lull in buying extends virtually to all classes of melters, with stovemakers particularly backward. Stove business has been extremely small, considerably under that of the corresponding period a year ago. Jobbing nage. The present weakness is ascribed by sellers to the unloading of some speculative iron which was bought at lower figures earlier in the year.

Weakness In the South

Birmingham, Ala., March 24.—The southern pig iron market is weaker. Sales are reported under previous minimum of $23 for No. 2 foundry while the smaller furnaces which have been selling at $24 are taking a little business at $23.50. Local consumption continues active and indications are for steady operation for some time. Especially is this true in cast iron pipe.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Mar. 26, 1924	Feb., 1924	Dec., 1923	Mar., 1923
PIG IRON				
Bessemer, valley del., Pitts....	$24.76	25.01	24.17	31.67
Basic, valley	22.00	22.00	20.50	29.80
Basic, eastern del., eastern Pa...	22.00	22.50	23.30	29.35
*No. 2 foundry, del. Pitts.....	23.76	24.76	23.77	31.37
*No. 2 foundry, Chicago.....	24.50	24.40	23.00	31.25
*Southern No. 2, Birmingham...	23.00	23.00	20.75	26.50
*Southern Ohio, No. 2, Ironton.	23.50	24.00	22.50	30.75
**No. 2X, Virginia furnace.....	26.00	26.50	24.50	28.25
**No. 2X, eastern del., Phila..	24.13	24.26	24.26	32.00
Malleable, valley	22.50	23.00	21.50	29.20
Malleable, Chicago	24.50	24.40	23.00	31.25
Lake Superior charcoal, Chicago	29.04	29.04	29.04	35.55
Gray forge, val., del. Pittsburgh	24.26	24.61	23.27	30.77
Ferromanganese, del., Pitts.....	112.29	112.29	113.79	120.79
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh.	42.50	42.50	42.50	44.50
Sheet bars, open-hearth, Pitts....	42.50	42.50	42.50	44.50
Billets, bessemer, Pittsburgh.....	40.00	40.00	40.35	44.50
Billets, open-hearth, Pittsburgh..	40.00	40.00	40.35	44.50
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.40	2.40	2.40	2.30
Steel bars, Chicago	2.50	2.50	2.50	2.34
Steel bars, Philadelphia.....	2.67	2.72	2.72	2.705

	Mar. 26, 1924	Feb., 1924	Dec., 1923	Mar., 1923
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia.....	$2.57	2.57	2.62	2.705
Iron bars, Chicago mills.....	2.40	2.40	2.40	2.53
Beams, Pittsburgh.....	2.50	2.50	2.50	2.35
Beams, Philadelphia	2.57	2.62	2.72	2.77
Beams, Chicago	2.60	2.60	2.60	2.44
Tank plates, Pittsburgh.....	2.40	2.45	2.50	2.35
Tank plates, Philadelphia	2.57	2.57	2.72	2.77
Tank plates, Chicago.....	2.60	2.60	2.60	2.44
Sheets, blk., No. 28, Pittsburgh.	3.75	3.75	3.75	3.55
Sheets, blue anl., No. 10, Pitts.	2.85	2.90	2.95	2.70
Sheets, galv., No. 28, Pittsburgh	4.90	4.90	4.90	4.65
Wire nails, Pittsburgh.....	3.00	3.00	3.00	2.90
COKE				
Connellsville furnace	4.00	4.00	3.85	7.15
Connellsville foundry, ovens....	4.75	4.80	4.80	8.15
OLD MATERIAL				
Heavy melting steel, Pittsburgh	18.50	21.60	18.35	26.10
Heavy melting steel, eastern Pa.	16.75	18.95	16.80	24.85
Heavy melting steel, Chicago...	15.75	18.00	16.00	23.15
No. 1 wrought, eastern Pa.....	18.50	21.40	19.00	27.60
No. 1 wrought, Chicago.....	15.25	17.50	16.35	23.25
Rails for rolling, Chicago.....	18.25	20.00	17.05	24.90

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.

Mar. 26, 1924	Mar. 19, 1924	Feb., 1924	Dec., 1923	Mar., 1923	Mar., 1914
$43.13	$43.25	$43.49	$43.02	$45.31	$23.60

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

The annual report of the National

a Chicago melter is noted. Current inquiry for northern iron includes 1000 tons of malleable for a Michigan user; 6000 tons of foundry iron for Chicago; several hundred tons of foundry for Milwaukee, and 200 tons of foundry for Chicago. Charcoal iron sales are confined to carlots at $26, furnace. A Milwaukee inquiry is pending for several hundred tons of silveries.

Small Tonnage Sales Made

Philadelphia, March 25.—Pig iron buying here is comprised mainly of small tonnages for quick shipment. There is a disposition among buyers to postpone their purchases wherever possible. Eastern foundry iron continues to be quoted at $22.50 to $23, base furnace, but no real market exists to test that quotation. The basic demand is entirely filled for the pres- foundries report improvement in demand. February business of job plants in this district was 66⅔ per cent larger than in January, and 4.3 per cent in excess of the corresponding period a year ago. The largest single sale of pig iron reported is 1000 tons of foundry for second quarter delivery to an Indiana melter. The order was booked by the St. Louis Coke & Iron Co. This same producer sold 500 tons of foundry iron to a Davenport melter for shipment through March and April. Southern iron has weakened. Two makers in that section who recently were firm at $24, now are willing to take $23. A small tonnage was sold on a basis of $22.50, Birmingham, and a shade better than that was reported on a small lot of resale iron. Chicago is nominally unchanged at $24, but that price would be shaded on a round ton-

Enameling & Stamping Co., St. Louis, for 1923 showed operating profits of $2,538,553 against $2,856,187 in 1922. After depreciation, interest, taxes and preferred dividends, there was $571,295 for the common stock. The company has passed its regular quarterly dividend.

William H. Starke Dies

William H. Starke, vice president of the Central Foundry Co., New York, died March 25 in that city after an illness of about three months. He was born in Haverstraw, N. Y., 45 years ago and joined the Central Foundry Co. in 1907. He became purchasing agent shortly after and in 1922 was appointed vice president in charge of sales. He held both positions at the time of his death. Mr. Starke was a member of the American Iron and Steel institute.

Iron and Steel Prices

SCRAP PRICES, PAGE 828; WAREHOUSE, PAGE 878; ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 884

Pig Iron

Prices per gross ton

Bessemer, valley	$23.00 to 23.50
Bessemer, Pittsburgh	24.76 to 25.26
Basic, valley	22.00
Basic, Pittsburgh	23.76
Basic, Buffalo	21.50 to 22.00
Basic, del., eastern Pa.	21.50 to 22.25
Malleable, valley	22.50
Malleable, Pittsburgh	24.26
Malleable, Chicago	24.50
Malleable, Buffalo	21.50 to 22.00
Malleable, del., eastern Pa.	24.00 to 24.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	24.63 to 24.76
No. 1X, Buffalo	22.50
No. 2 foundry, valley	22.00 to 23.00
No. 2 foundry, Pittsburgh	23.76 to 24.76
No. 2 foundry, Buffalo	21.50 to 22.00
No. 2 foundry, Chicago	24.50
No. 2 foundry, Granite City	25.50 to 26.00
No. 2 foundry, Ironton fur.	23.50 to 24.00
No. 2 foundry, Cleveland, del.	24.50
No. 2 foundry, del., Phila.	23.63 to 23.76
No. 2 foundry, N. J. tidewater	24.13
No. 2X, eastern del., Phila.	24.13 to 24.26
No. 2X, east. N. J. tidewater	24.63
No. 2X, eastern del., Boston	26.15 to 26.65
No. 2X foundry, Buffalo fur.	22.00
No. 2X, Buffalo, del. Boston	26.91 to 27.91
No. 2 southern, Birmingham	22.50 to 23.00
No. 2 southern, Cincinnati	26.55 to 27.05
No. 2 southern, Philadelphia	30.80 to 31.30
No. 2 southern, Chicago	28.51 to 29.01
No. 2 southern, Cleveland	29.01 to 29.51
No. 2 southern, Boston (rail and water)	29.91 to 30.41
No. 2 southern, St. Louis	28.17 to 28.67
No. 2X, Virginia furnace	25.50 to 26.50
No. 2X, Virginia, Phila.	30.17 to 31.17
No. 2X, Virginia, Jersey City	31.04 to 32.04
No. 2X, Virginia, Boston	31.42 to 32.42
Gray forge, eastern Pa.	22.50
Gray forge, val. del., Pitts.	24.26
Low phos., standard, valley	29.00
Low phos., standard, Phila.	nominal
Low phos., Lebanon, furnace	27.00
†Low phos., English, Phila.	26.76 to 27.76
Charcoal, Birmingham	33.00
Charcoal, Superior, Chicago	29.04

Silvery Iron

Jackson County, Ohio, furnace

7 to 8 per cent	31.00
8 to 9 per cent	32.50
9 to 10 per cent	34.50
10 to 11 per cent	36.50
11 to 12 per cent	39.00
12 per cent	41.50

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 to 11 per cent	41.50
11 to 12 per cent	44.00
12 to 13 per cent	46.50

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	107.50
Ferromanganese, delivered, Pittsburgh	112.29
Spiegeleisen 19 to 21 per cent furnace or tidewater	38.00 to 40.00
†Spiegeleisen, English, delivered tidewater	35.00 to 38.00
Ferrosilicon, 50 per cent contract freight allowed	75.00
Ferrotungsten standard, cents per pound contained	85.00 to 95.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	10.00 to 10.25
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

†Duty paid.

Coke

Beehive, Ovens

Prices per net ton

Connellsville furnace	$4.00 to 4.25
Connellsville foundry	4.75 to 5.50
New River foundry	10.50 to 11.00
Wise county furnace	4.75 to 5.75
Wise county foundry	5.50 to 6.50
Alabama furnace	
Alabama foundry	5.50 to 6.50

By-Product

Foundry, Newark, N. J., del.	$10.91
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	12.50
Foundry, Granite City, Ill.	12.50
Foundry, Alabama	5.50 to 6.50

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$40.00
Open-hearth, Youngstown	40.00
Open-hearth, Philadelphia	43.17 to 45.17
Bessemer, Pittsburgh,	40.00
Bessemer, Youngstown	40.00
Forging, Pittsburgh	45.00
Forging, Philadelphia	48.17 to 50.17

SHEET BARS

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50

SLABS

Pittsburgh	$40.00 to 41.50
Youngstown	40.00 to 41.50

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh	$51.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.35c to 2.50c
Universal skelp, Pittsburgh	2.35c to 2.50c
Sheared skelp, Pittsburgh	2.35c to 2.50c

Shapes, Plates and Bars

Prices per pound

Structural shapes, Pittsburgh	2.40c to 2.50c
Structural shapes, Phila.	2.57c to 2.82c
Structural shapes, New York	2.59c to 2.84c
Structural shapes, Chicago	2.60c
Tank plates, Pittsburgh	2.35c to 2.50c
Tank plates, Philadelphia	2.52c to 2.82c
Tank plates, New York	2.54c to 2.84c
Tank plates, Chicago	2.60c
Bars, soft steel, Pittsburgh	2.40c
Bars for cold finishing, Pitts.	2.55c
Bars, soft steel, Philadelphia	2.62c to 2.72c
Bars, soft steel, New York	2.64c to 2.74c
Bars, soft steel, Chicago	2.50c
Bars, refined iron, Pittsburgh	3.25c to 5.00c
Bars, rail steel, Chicago	2.30c to 2.33c
Bars, rail steel, mill	2.10c to 2.20c
Reinforcing bars, billet, Pitts.	2.30c to 2.40c
Bar iron, common, Phila.	2.57c
Bar iron, common, New York	2.59c
Bar iron, common, Chicago	2.40c
Bars, forging quality, Pitts	2.65c

Hoops, Bands, Shafting

Prices per pound

Hoops, Pittsburgh, under 5 in.	2.75c to 3.00c
Hoops, Pittsburgh, 20 gage, under 1 in.	3.35c to 3.50c
Bands, Pittsburgh	2.75c to 3.00c
Cold finished steel bars, Pittsburgh base, carloads	3.00c
Cold-finished steel bars, base Pittsburgh, less carloads	3.25c
Steel shafting, Pittsburgh	3.00c
Cotton ties, bundle 45 lb. Pittsburgh	$1.69
Cut nails, Pittsburgh	3.00c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	30.00 to 34.00
Light rails, 25 to 45, mill	2.00c to 2.15c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	3.05c to 3.15c
Spikes, small railroad, Pitts.	3.25c to 3.50c
Spikes, boat and barge, Pitts.	3.50c
Spikes, railroad, Chicago	3.10c
Track bolts, Pitts. Standard	4.00c
Track bolts, Pitts., small	4.75c to 5.00c
Track bolts, Chicago	4.10c
Tie plates, Pittsburgh	2.55c to 2.60c
Ties plates, Chicago	2.60c

Spike, tie plate and truck bolt prices for carlots.

Wire Products

To Jobbers in Carloads

Prices per pound

Wire nails, Pittsburgh	3.00c
Galv'd nails, 1-inch and over	5.25c
Plain wire, Pittsburgh	2.75c
Annealed wire, Pittsburgh	2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.35c
Barbed wire, painted, Pitts.	3.45c
Barbed wire, galv., Pitts.	3.80c
Polished staples, Pittsburgh	3.45c
Galvanized staples, Pittsburgh	3.80c
Coated nails, count keg, Pittsburgh	2.60c to 2.70c
Woven wire fencing (retailers)	65 off
Woven wire fencing (jobbers)	67½ off

Chain, Piling, Strip Steel

Prices per pound

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.55c
Hot rolled strip steel, Pittsburgh stamping quality	2.75c to 3.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, 0.100-inch and heavier, base	4.75c to 5.00c

Sheets

SHEET MILL BLACK

Prices per pound

No. 28, open-hearth, Pitts.	3.75c to 3.85c
No. 28, bessemer, Pitts.	3.75c to 3.85c
No. 28, open-hearth, Phila.	3.97c to 4.17c
No. 28, open-hearth, Chicago.	4.09c to 4.19c

TIN MILL, BLACK

No. 28, open-hearth, Pitts.	3.75c to 3.85c

GALVANIZED

No. 28, open-hearth, Pitts.	4.90c to 5.00c
No. 28 bessemer, Pittsburgh	4.90c to 5.00c
No. 28, open-hearth, Phila.	5.22c to 5.32c
No. 28, open-hearth, Chicago.	5.19c to 5.34c

BLUE ANNEALED

No. 10, open hearth, Pitts.	2.85c to 3.00c
No. 10 bessemer, Pittsburgh.	2.85c to 3.00c
No. 10, open-hearth, Phila.	3.22c to 3.32c
No. 10, open-hearth, Chicago.	3.34c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	5.20c to 5.35c

Tin Plate

Prices per 100-pound box

Tin plate, coke base, Pitts.	$5.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$61.20 to 62.20
Six-inch and over, Chicago	57.20 to 58.20
Four-inch, Birmingham	52.00 to 53.00
Six-inch and over, Birmingham	48.00 to 49.00
Four-inch, New York	65.60 to 66.60
Six-inch and over, New York	60.60 to 61.60

Standard fittings, Birmingham, base, $110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

Scrap Has Further Loss

Decline General in All Markets—Buyers Hold Off Covering Future Needs —Yard Stocks in Some Centers Are Light

SCRAP PRICES, PAGE 882

Chicago, March 25.—Iron and steel scrap prices have broken through two sets of lows predicted by local dealers, and with melting steel at $15.75 to $16.25 the bottom does not yet appear to be in sight. If steel settles much further it will cause country scrap to be held and deter railroads from offering their accumulations. Larger dealers continue bearish and melters generally are holding aloof. Some dealers believe a recession of about 50 cents will bring the Inland Steel Co. into the market for a heavy tonnage. Trades among brokers constitute practically the only activity. Rerolling mills have been fairly heavy buyers of rails. Sheet clippings are low enough to permit their sale at a profit to southern Ohio points. Cast and malleable are relatively firmer than steel grades. Railroad offerings include 2000 tons by the St. Paul and 750 tons by Geo. W. Jenings.

Boston Market Weak

Boston, March 25.—Iron and steel scrap prices have further weakened as a result of listless demand. A few orders of heavy melting steel to local consumers are reported at close to $12, shipping point. Demand from Pennsylvania steel makers is insufficient to move tonnage from New England. The highest offer of the week from Pennsylvania was $16.75, delivered, which means that a dealer here could not pay above $11.50. Chemical borings have sold in small lots at $12, shipping point. Strictly No. 1 machinery has recently sold at $21.50, delivered. One car of textile scrap was placed at $22.50, delivered.

Dull At New York

New York, March 25.—Dullness again features iron and steel scrap with dealers' buying prices off on No. 1 railroad, heavy melting steel, rails for rolling, and stove plate. In rails for rolling the reduction is $1, while in the others the revision was about 50 cents. One dealer is quoting $15.50, delivered, for railroad steel for shipment to Bethlehem, Pa., and another, $16. Marked listlessness still prevails in cast scrap, a Phillipsburg, N. J., consumer being one of the few consistant buyers at this time. Wrought material and borings and turnings are moving slowly, at prices prevailing for the past two weeks.

Small Lots in East

Philadelphia, March 25.—Buying of iron and steel scrap continues to be confined to small and moderate lots. Sparrows Point and Steelton have embargoed scrap and other consumers have placed embargoes to some extent. Generally prices tend to be easier and are largely lower. The market is close to the lower end of the range.

Buffalo Expects Rise

Buffalo, March 25.—Buying is light but a revival is expected next month when a large mill which has been buying piecemeal the past few months buys for future requirements. This mill has been buying small lots of heavy melting steel at from $17 to $18, but dealers say stocks are so low this consumer will hardly be able to buy tonnage for less than $18.50 or $19. One local mill has paid $18.75 for carload lots within the week, and dealers are reported to have been buying at $19 to fill orders booked at $20.75. Malleable demand has increased and No. 1 cast and stove plate demand are better.

Weak and Overstocked

Detroit, March 22.—The scrap market continues weak with most prices averaging 50 cents a ton lower. Consumers have unusually large tonnage in yards and on track, sufficient for many months. Meantime producers are offering large lists for bids. One producer offers 40,000 tons for bids next week. Yard men have stocked up liberally and are finding it difficult to take care of tonnage since consumers are not ordering on old contracts.

Buyers' Indifference Weakens Market

Cleveland, March 25.—Indifference of consumers to efforts of scrap sellers to place tonnage is responsible for further weakness of the market in this district. Transactions almost wholly are confined to dealers, the attitude of users being that of waiting for what they believe shortly will be a more advantageous time to buy. Prices throughout the list are down 50 cents to $1 a ton, but in the absence of trading, are largely nominal. Mahoning valley prices also are soft.

Stocks Lasting Longer

Pittsburgh, March 25.—Open-hearth operation is being cut down in spots in the Pittsburgh territory and stocks of

(*Concluded on Page* 839)

Semifinished Supply Easy

Prompt Shipments Offered by Valley Makers—Buyers Not Closing Contracts Freely, Seeking Lower Prices

SEMIFINISHED STEEL PRICES, PAGE 829

Pittsburgh, March 25.—Buyers of semifinished material are not rushing signed contracts to the producers. More are to be heard from, and strong efforts are being made to develop lower figures than the open market quotations. New inquiries are scarce. None is noted for 4 x 4-inch rerolling billets or the smaller billets. A few negotiations are under way between regular customers and their sources of supply. The $40, Pittsburgh or Youngstown, price on 4 x 4-inch rerolling billets is practically untested. The $42.50 price on sheet bars shows no weakness. For some slabs $41.50 Pittsburgh, has been paid although $40 still is available. Inquiries for slabs are few and far between. Forging billet business develops from time to time in small lots on which $45, Pittsburgh is secured. Wire rod inquiries develop every week, some of which are satisfied at the regular $51, base Pittsburgh price. Skelp is untested at 2.35c to 2.50c, base Pittsburgh.

Can Supply Prompt Tonnage

Youngstown, O., March 25.—Open rollings in sheet bar schedules are beginning to appear and producers of semifinished material now are in a position to consider inquiries for prompt tonnages. They are reluctant to entertain contract tonnages of sheet bars but where tonnage is desired for April shipment not much difficulty will be encountered in making a mill connection. Sheet bars continue quotable on the basis of $42.50, Youngstown or Pittsburgh, a regular customer of one producer having closed this week on a round tonnage at this figure. Not much demand for slabs or billets exists. One producer remains out of the market. Approximately 1000 tons of slabs were placed late last week with a producer here on the basis of $40, Youngstown, which is the market price.

Market Is Easier

Philadelphia, March 25.—Billet demand is again smaller. The market on the past week's business was $39, Pittsburgh for rerolling billets and $44 to $45 for forging quality, with lower prices reported in some instances.

Forging Billets Sold

Cleveland, March 25.—Some carload sales of forging billets have been made in this district at $45, Pittsburgh. In some cases $46 was done. The leading maker here is fully booked for the next quarter. Inquiries for semifiinished material are scarce. A Northern Ohio sheet bar producer has sold about 5000 tons for second quarter at $42.50, Youngstown.

Spiegel Buying

For Domestic and Exports Needs Heavier—Tungsten Scrap Imported

FERROALLOY PRICES, PAGE 829

New York, March 25.—Spiegeleisen business during the past week has been of larger proportions than has been usual of late. A part of the improvement is due to buying for export to Europe. Practically all of the domestic buying is restricted to prompt and nearby shipment and there is not much interest in forward requirements. The total of the past week's business is about 1500 tons and this included several hundred tons sold by English makers. The market on American spiegeleisen continues $38 to $40 furnace for 20 per cent metal.

Sales of ferromanganese the past week

have been restricted to small lots for quick shipment. This business has involved both English and domestic metal and nothing lower than $107.50 duty paid tidewater has been reported.

New business in the special alloys remains light, but shipments on contracts are heavy. For the first time in a considerable period foreign ferrochrome of the higher carbon content is being offered in this market at prices competitive with the domestic product. Maximum 8 per cent carbon ferrochrome has been offering at 9 cents a pound contained and maximum 6 per cent at 9¼ cents. Ferrotungsten inquiry is lacking. Price of ferrotungsten remains 88 to 93 cents a pound contained. Complaints are heard in the tungsten trade as to import offers of tungsten steel scrap which can be remelted into high speed steel at small expense. The scrap takes a duty of 75 cents a ton where valued under 7 cents a pound, whereas new high speed steel takes a duty of 72 cents a pound specific and 8 per cent ad valorem. Ferrovanadium, ferromolybdenum and ferrosilicon quotations are unchanged.

Single Carloads Being Bought

Pittsburgh, March 25.—Single carloads appear to be the largest orders being placed right now for ferroalloys although occasionally a 100-ton inquiry comes out. Most of the consumers have covered ferromanganese needs for the second quarter and consumption still is on a high plane, as indicated by the fact that domestic producers are being besieged by requests for larger and prompter shipments. To meet this demand for increased shipments, E. J. Lavino & Co. are blowing in an additional furnace at Lebanon, Pa., to produce ferromanganese. Already most of the output for several weeks to come has been obligated. This condition makes for a scarcity of prompt ferromanganese. The price is unchanged on domestic as well as English material, $107.50 seaboard base.

In spiegeleisen, no inquiries or sales are noted locally, and the price situation is the same as it has been for several weeks, $38 to $40 furnace, depending upon the quantity of 19 to 21 per cent material wanted. Carload and 100-ton inquiries are out for 12, 15 and 50 per cent ferrosilicon; the 12 per cent is quoted at $39.50 f.o.b. makers' works, or about $52 Pittsburgh, and the 15 per cent at $41. The 50 per cent grade still is $75 freight allowed to Pittsburgh. Small inquiries for ferrovanadium are fairly numerous although sales are few. The last made was at $3.75. Ferrotungsten interest is on the increase, particularly on the part of tool steel manufacturers. Prime material is being quoted at 95 cents to $1 although some of the poorer grade is available at 87 to 90 cents per pound.

Ferro Sales Are Heavier

Chicago, March 25.—Ferromanganese has been more active in this territory. Sales during the past two weeks aggregate nearly 4000 tons. Many inquiries for car lots now are pending. Quotations of ferromanganese remain unchanged at $107.50, duty paid tidewater. Spiegeleisen is quoted at $35, New Orleans.

Net earnings of the Interstate Iron & Steel Co., Chicago, in 1923 were $351,061 compared with $231,571 in 1922.

Coke Sales Are Dwindling

Furnaces Postpone Awards Hoping for Price of $3.75.—Spot Business Confined to Few Carloads—Foundry Demand Also Light

COKE PRICES, PAGE 829

Pittsburgh, March 25.—Outside of one or two blast furnaces negotiating quietly for partial requirements amounting to 4000 or 5000 tons of standard furnace coke monthly, the beehive market is dull. These inquiries probably will be closed before the present week elapses. One or two blast furnace operators are indefinitely postponing awards hoping for a price of $3.75. The market so far has maintained a $4 minimum. Spot sales made at that figure this week involved 25 or 50 carloads at a time. One contract for 4000 tons monthly for a year was closed by a Connellsville producer with an eastern gas company at $4. Other cokemakers refuse to go below $4.25. Some, not interested, quote $4.50.

The Youngstown Sheet & Tube Co. is putting out a blast furnace and has issued stop orders to its beehive coke sources of supply. Heating coke demand is dwindling. Small lot sales have been made at $3.25 to $3.50. Foundry coke is selling in small lots only at $4.75 to $5.50, with premium brands bringing higher figures.

Prices Are Lower

New York, March 25.—Coke prices declined during the past week. Standard foundry coke for spot and nearby shipment now may be quoted at $5.25 to $5.75, Connellsville, with higher prices obtained on special brands. Generally, the market is quiet and the current volume of business is smaller than usual. On by-product foundry coke the market continues $10.91, delivered at Newark and other northern New Jersey consuming points.

Cincinnati Sales Small

Cincinnati, O., March 25.—The two largest coke sales of the week involve Wise county foundry and furnace grades. The Louisville & Nashville railroad closed for 20 cars of foundry coke for second quarter while the Procter & Gamble Co., Cincinnati, bought 25 cars of the furnace fuel. Practically no inquiries of consequence are before the trade, and sales are small. Spot Wise county foundry coke is quotable at $5.50 to $6.50, ovens, while the furnace grade ranges from $4.75 to $5.75. Sales of New River foundry coke have eased off slightly, although no change in prices is noted. The range is $10.50 to $11. Producers of by-product foundry coke report business satisfactory, while movements of Pocahontas coke are small.

Buying Hand-to-Mouth

St. Louis, March 25.—Users of foundry coke are purchasing from hand-to-mouth, and there has been considerably less than the usual covering for second quarter. Sales of beehive coke continue in small volume, demands being supplied throughout this territory by by-product manufacturers. Buying by industrial coke users continues in good volume, several important utility companies in adjacent territory having closed for their requirements over the balance of the year. Prices on all grades remain steady.

More Small Sales

Birmingham, Ala., March 24.—A slight improvement is noted in the coke market. A little more coke is being shipped from the district, and numerous small orders are being placed for prompt delivery. Foundry coke is $5.50 to $6, while $6.50 is obtained in some instances.

Wire Buying Light

Most Orders for Spot Tonnage and Farmer Requirements Disappointing

WIRE PRICES, PAGE 829

Pittsburgh, March 25.—Wire mill operations are sustained at 75 per cent or higher on the average and that figure is maintained by spot buying. Buying of mixed carloads is not as extensive as in February, the majority of such buyers having supplied their requirements until fall. Buying of fencing and barbed wire has left much to be desired and is not nearly as large as was expected. The new terms as of March 10 served to stimulate this buying somewhat but the return has not been as great as was hoped. Plain wire is quoted at 2.75c, base Pittsburgh, and wire nails at 2.60c to 2.70c, although at times concessions appear.

Terms Are Made Easier

Chicago, March 25.—On fence, barb wire and staples the leading maker has extended its net terms to 6 months and has increased its cash discount to 5 per cent in 10 days. Backward weather continues to affect wire and wire products adversely and it is likely that many farm improvements scheduled for this spring will be postponed until fall. Railroad and freight car business has tapered off in the past week. Although the outlook is less bright than it has been, operations continue at about 75 per cent at the mills.

Compete for Cut Nails

Pittsburgh, March 25.—Orders for cut nails are not numerous and considerable competition develops over open market inquiries. Quotations of 3.25c, base Pittsburgh, have largely disappeared except on less-than-carload quantities and latterly business has been done at 3.00c, base Pittsburgh. One order for a carload placed last week developed 2.95c.

Install New Equipment

Some improvements are being made at the Cherry Valley furnace, Leetonia, O., controlled by the M. A. Hanna Co. Four new boilers and an overhead gas washing system are being installed. At the Dover, O., furnace, controlled by the same company, a sintering plant has been installed for utilizing flue dust. The plant has a capacity for sintering 3000 tons a month.

Bar Buying Conservative

Consumers Covering Carefully and Sales Are Relatively Light—Specifications Show No Decline and Exceed Shipments

BAR PRICES, PAGE 829

Chicago, March 25.—Consumers of soft steel bars display an increasing tendency to limit buying to actual requirements but these are so heavy bookings generally slightly exceed shipments. The automotive industry has slowed down a trifle. Last week's railroad car sales in this district, while embracing 18 lots, were small and call for only 20,000 tons of finished steel. One development is specification for April, by a large implement maker, of practically double its March tonnage. A feeling of caution and uncertainty is present, but immediate requirements still top shipments and, generally speaking, business is better than business sentiment. The soft steel bar quotation is 2.50c, Chicago.

Two rail steel bar mills are now operating double turn. Others are conserving their backlog and adhering to single turn. Bar iron reflects no such improvement, and single turn is the best that can be done. Bar iron is quotable at 2.40c, Chicago, and rail steel bars at 2.30c to 2.33c, Chicago.

Bar Sales Moderate

Boston, March 25.—While inquiry for bars for second quarter continues strong, buying during the past week against this inquiry did not come up to expectations. Prices are firm at 2.40c, Pittsburgh. A few sales at 2.35c and one at 2.30c, Pittsburgh, are reported.

Inquiry Is Small

Philadelphia, March 25.—Steel bar inquiry is small and orders do not equal shipments. There is more eagerness on the part of makers for business. The usual price is 2.40c, Pittsburgh, but 2.35c and 2.30c, Pittsburgh, continue to be done on attractive tonnages.

Expect Smaller Specifications

Pittsburgh, March 25.—Merchant steel bar users have been active in placing second quarter contracts and while specifications are prompt producers are somewhat fearful that the rate will not be maintained in second quarter. Efforts to develop lower than 2.40c, base Pittsburgh, are being made, but that continues the quotable market since only in connection with some orders for bars, plates and shapes from large purchasers where a straight price has been made on the three products, has any concession under 2.40c appeared.

Refined iron bars are practically the same as for some weeks. Prices are unchanged at 3.25c to 5.00c base Pittsburgh, the latter for muck bar iron although that price might be shaded on a large tonnage order.

Specify For Second Quarter

Cleveland, March 25.—Steel bar consumers in this territory continue to specify quite freely for their April requirements and further indications are that the tonnage to be taken out during the second quarter will not be much different from that required during the first three months. February tonnage from this territory entered by some of the leading mills will be larger than in March. With other mills, however, it has been considerably less. Occasionally some contracting for second quarter is being done but this is exceptional-since most business is being placed by specification. Although there is talk of 2.30c, Pittsburgh being done on attractive tonnages of steel bars, little evidence of such concessions has appeared in this immediate territory and 2.40c, Pittsburgh, remains the common price. The market on hoops and bands continue irregular at a spread of 2.75c to 3.00c, Pittsburgh, with some makers more aggressive for tonnage at the expense of prices.

Cold Finished Inactivity Grows

Pittsburgh, March 25.—Inactivity in cold-finished bars is more pronounced. Operations are high, some plants running full, and backlogs are being reduced. Because sales have been so limited since March 10 makers note little or no reaction to the new card of extras. The market price is unchanged at 3.00c, base Pittsburgh, and is firm except where 3.00c, Chicago quoted in the West can be met by equalizing freight rates.

Hoop Delivery Delayed

HOOP PRICES, PAGE 829

Pittsburgh, March 25.—For the narrow sizes of hot strips such as hoops and bands, the demand recently has received considerable impetus and one or two makers report themselves as being from five to six weeks behind on deliveries. This condition exists because numerous small orders have been taken from practically every consuming line of activity, automotive, building hardware and indirectly from the railroads. Regular hoops and bands are quoted at 2.75c to 3.00c base Pittsburgh, and on exceedingly narrow hoops of lighter gages higher prices such as 3.35c or more are being obtained because of the limited output possible from a tonnage standpoint on these small mills.

Buy Bolts, Nuts, Rivets Second Quarter

NUT AND BOLT PRICES, PAGE 884

Cleveland, March 25.—Rivet demand is improved. Orders from car builders, etc., have shown a decided pick-up in volume and fully 90 per cent of the business is going at 2.75c, base Pittsburgh. Second quarter books were opened a week ago and good contracting is being done at the 2.75c price.

Large machine bolts are firm at 60 and 10 off on all second quarter business. However, on undesirable business a smaller discount still is quoted. Makers express satisfaction with the volume of business they are receiving.

Railroads Strengthen Demand

Philadelphia, March 25.—Considerable demand exists here for nuts, bolts, spikes and track materials. Some good spike bolt and rivet orders from the railroads were received last week. The Pennsylvania now is taking bids for its second quarter requirements of track bolts and spikes. Rivets are weak and attractive lots have gone as low as 2.60c, Pittsburgh. On second quarter bolts 60 and 10 off is maintained, but there is some shading on current business.

Few Contracts Are Taken

Pittsburgh, March 25.—Makers of nuts, bolts and rivets are booking a few contracts for second quarter and several have been written at 60 and 10 off for large machine bolts, as against the open market quotation of 60 and 5 off. Undoubtedly the former discount can still be obtained although 60 and 5 off is considered the quotable market. Some makers are inclined to sidestep contracts, believing the higher figures will be obtainable later. The past week has shown a slight improvement in carload orders. This applies to rivets on which 2.75c has been quoted on small lots, 2.70c base Pittsburgh on single carloads.

Second Quarter Buying Starts

Chicago, March 25.—Early indications from the small second quarter buying already done foreshadow a continuance of practically the same volume of business as in the opening quarter. The automobile industry so far reveals no definite trend. Some large implement makers are worse off than at this time last year while smaller ones are enjoying decidedly better business. The second quarter basis is 60 and 10 off for large machine bolts. Operations and specifications are unchanged.

Warehouse Sales Heavier

WAREHOUSE PRICES, PAGE 884

New York, March 25.—Warehouse sales for this month will exceed those of February, not only in total volume but on the basis of business from day to day. As compared with a year ago, business this month will be less in volume, although involving a greater number of individual sales. This is attributed to the open weather this winter. Business that under less favorable weather conditions usually comes in heavily in March and April, has this year been spread out more evenly, accounting for the unusual amount of trading in January and February, and the smaller amount than normal this month and the somewhat less active outlook for April. Prices are steady all down the list.

Price Levels Unchanged

Philadelphia, March 25.—Warehouse price levels generally are unchanged, although cutting is more apparent. In some cases quotations have been cut $5 or more per ton. This shading is not regarded as a real market factor. In all instances the shading is a result of foreign steel competition and other special factors. The volume of trading continues well maintained, although the usual spurt in

business which characterizes the approach of spring has not made its appearance.

Trading Above February

Cleveland, March 25.—Iron and steel trading from warehouse stocks generally is above the volume of February but is lower than a year ago this month. Stock prices are firm with but little shading except on particularly attractive tonnages. Building steel has not yet been in demand for spring building although sales are enhanced by the open winter.

Lower Prices on Iron Ore Are Indicated

ORE PRICES, PAGE 884

Cleveland, March 25.—Lake Superior iron ore prices have not been determined as yet, though there are strong indications that prices will be lower than last year. Competition for the 250,000 tons wanted by the Ford Motor Co. has led large producers to offer concessions, and it is practically certain this business will not be closed at last year's prices. It is the largest single tonnage now pending in the open market. Producers believe the sale will establish the market price for the season, though there is a possibility of neither the buyer nor the seller disclosing what price is done. The Ford company is understood to be ready to close contracts this week, probably Wednesday. The market is weak; sellers apparently have given up hope of realizing as much for their ore as last year. Several are known to be considering 50 cents less.

The Lake Superior Iron Ore association gives the following record of recent ore consumption:

	Tons
Ore consumed in January	4,687,947
Ore consumed in February	4,782,639
Increase in February	94,692
Ore consumed in February, 1923	4,670,787
Ore at furnaces March 1, 1924	22,231,900
Ore on Lake Erie docks March 1, 1924	7,026,056
Total at furnaces and Lake Erie docks March 1, 1924	29,257,956
Total at furnaces and Lake Erie docks March 1, 1923	30,518,670

Strip Shipments Larger

STRIP PRICES, PAGE 829

Pittsburgh, March 25.—While there is general disinclination of hot and cold-rolled strip buyers to purchase for distant delivery, spot business is sufficient to enable mills to operate at fairly high rates. The average is 70 to 80 per cent. Shipments this month are in excess of the same period in February. A few second quarter contracts have been written for hot and cold strips. Hot strip steel is quoted at 2.75c to 3.00c and cold-rolled at 4.75c to 5.00c, base Pittsburgh.

Many Small Chain Orders

Pittsburgh, March 25.—Chain orders are all for small and unimportant tonnages. Because they are so numerous operations of chain plants are kept at a high level, about 85 per cent. Prices are unchanged, 6.00c, base Pittsburgh, being named for 1-inch proof coil chain.

More Plate Tonnages Up

Texas Pipe Line To Take 25,000 Tons; Railroad's Inquiry Calls for 30,000 Tons of Steel—Standard Oil Closes for 5000 Tons

PLATE PRICES, PAGE 829

Pittsburgh, March 25.—One or two of the leading independent steel producers shared fairly well in the recent distribution of car plate tonnage and one is operating its plate department better than 85 per cent. The Carnegie Steel Co. continues to operate its plate making capacity at 90 per cent. Day-to-day buying is not extensive, consisting chiefly of small tonnages. Tank inquiries are absent. Tank builders report that no oil storage tanks worthy of mention have been awarded since August. However, they believe some attractive tank lettings will take place before next fall. Price concessions continue to appear, and while the market is quoted at 2.35c to 2.50c, base Pittsburgh, it is becoming increasingly difficult to find quotations as low as that minimum, and 2.40c is as far as most are willing to go. Barge work pending is not extensive and gas holder inquiries are few.

Delay Car Plate Orders

New York, March 25.—The principal plate business pending in this district is involved in car orders recently placed. The steel tonnage for one reason or another has not yet been closed, though it is understood the question of price has nothing to do with the delay. Miscellaneous business in this territory is small in the aggregate. The market in the East continues 2.20c to 2.35c, base Pittsburgh, depending on the attractiveness of the business. The Chicago Bridge & Iron Works has booked an order from the Pan-American Petroleum & Transportation Co. for a tank to be erected at Boston, involving about 250 tons. The Standard Oil Co. of New Jersey has placed 4000 to 5000 tons of plates for stills. It is understood the tonnage was distributed among three eastern makers.

It recently was reported erroneously that the Chicago Bridge & Iron Works had booked a contract for 1000 tons of tank work for the Commercial Alcohol Co. of Philadelphia. This contract was placed with Reeves Bros., Dover, O., and involved approximately 500 tons.

Inquire for Car Plates

Philadelphia, March 25.—An inquiry here involves 30,000 tons of plates, shapes and bars for 3000 hopper cars for the Chesapeake & Ohio railroad. This is a revival of the road's recent inquiry for 2000 hoppers. Some fair demand for oil stills is in prospect, but there is a tendency to postpone this as well as other oil work, due to the oil investigation in Washington. Current demand is restricted to small and moderate miscellaneous tonnages for prompt shipment. There is no disposition to buy forward. Eastern mill operations are around 60 per cent of finishing capacity. Prices continue 2.20c to 2.35c, Pittsburgh.

Big Pipe Line Coming

Cleveland, March 25.—Fabricators in this district are interested in a large riveted pipe line project for water purposes for Fort Worth, Tex. requiring 25,000 tons of steel which soon is to be up for bids. Included in the steel involved in this construction will be about 2000 tons of No. 10 gage sheets. Another water line of smaller size at Detroit remains in sight but has not yet developed to the point of taking bids. No special changes have developed in the plate market. Total tonnage is of fair amount but usually is in small lots. On ordinary business 2.40c, Pittsburgh, remains the going price but deviations below this figure are fewer. A Cleveland mill will furnish about 300 tons of boiler and firebox steel and a Pittsburgh maker about 300 tons of tank steel for locomotives recently placed by the Nickel Plate. Nothing has developed of the several boats which are being figured upon by lake builders. A considerable number of stills for the Standard Oil Co. remain unplaced.

Tanks Are Coming Out

Chicago, March 25.—Local fabricators are figuring on an oil-storage tank for the Magnolia Petroleum Co. Luling, Tex., requiring 1000 tons of plates. The Chicago Bridge & Iron Works is understood to have taken a contract of that size from the Atlantic Refining Co., Philadelphia. In general, demand for plates is slightly higher but deliveries as early as a week can be made and platemakers are fighting for business. The freight car builders continue the heaviest buyers of plates, which continue at 2.60c, Chicago.

Mount Cooper Boiler & Iron Co., Tulsa, Okla., has taken 1600 tons of plates for 10 tanks for a Texas company.

Tin Price Worries

Tin Plate Makers Concerned Over Profits With Production Costs

TIN PLATE PRICES, PAGE 829

Pittsburgh, March 25.—Some concern is being manifested by several independent manufacturers of tin plate over prices for third quarter since already they have had to buy spot pig tin for that position. For this they have had to pay advanced figures, which has increased their production costs measurably, making the present $5.50 price unprofitable. Manufacturers generally are well fixed with tin plate orders for first half and will delay announcement of a price for third quarter because of the pig tin situation. At present $5.50 per base box, Pittsburgh, is firm and even on stock tin plate quotations do not go below $5.25. Tin plate makers are anticipating as much as they possibly can the usual spring exodus of labor and are maintaining operations at 95 to 100 per cent, making stock in advance of actual requirements of customers, some being at least four weeks ahead of schedules.

Concrete Buying Is Light

Dullness Continues To Characterize Reinforcing Bar Market—Inquiry Confined to Small Tonnage Lots—Further Price Shading Develops

REINFORCING BAR PRICES, PAGE 829

Pittsburgh, March 25.—Recent awards of reinforcing concrete bars are all for limited tonnages. One or two involving from 200 to 400 tons each are pending and probably will be placed before the week is out. So far as can be learned here, the order for approximately 200 tons needed for the stadium at Bucknell college has not as yet been let by the Dresser-Minton Co., Cleveland, to whom the contract was sublet by the T. J. Foley Co. here. While one large steel interest is credited with quoting 2.20c base Pittsburgh on a lot of 1500 tons, this cannot be confirmed although 2.30c is known to have been quoted on small tonnages recently. The 2.40c figure is maintained by some as a minimum. Concrete bars out of warehouse stocks are held at 2.60c and 2.65c, base Pittsburgh. Considerable road work is pending but only one or two small 18 or 20-ton awards have been made.

Awards Slightly Increased

Chicago, March 25.—Concrete reinforcing bar warehouses have experienced a slight upturn in awards but still complain of a lagging tendency. There are evidences that the Washington disclosures are being discounted by business in general and that some of the uncertainty holding back business may be dissipated. If some of the larger building projects, like the Palmer House, Stevens hotel, Union League club and Sherman hotel addition, go forward some good bar tonnages are in prospect. Some reinforcing bar interests are seeking a reduction in the mill prices to them, but so far apparently without success. The bottleneck in the present market is the architect; proposed projects clutter his board but the owner is slow in giving the word to go ahead. The Illinois highway department is taking bids on 150 miles of road work. The range on billet reinforcing bars continues 2.75c to 3.00c, Chicago.

Movement Continues Small

Cincinnati, March 25.—Movement of reinforcing bars continues of small volume in this district. Distributors say that not more than 500 tons were sold last week. The only large work in sight is 1200 tons for a foundry addition to the plant of Lunkenheimer Co., Elmwood, O., bids on which went in March 24. The bulk of sales in recent weeks has been on small construction and additions to buildings. No change in prices is noted. Liberal road construction work planned by the state highway departments will call for large tonnages.

Inquiries Are Heavier

Cleveland, March 25.—Concrete reinforcing bar inquiries have gained considerable impetus, projects requiring an aggregate of several thousand tons now being in the market. The Hilliard road bridge will take 500 tons and is the largest inquiry out. From 6 to 10 schools in this district involving reinforcing bars are up for figures. H. K. Ferguson Co. is engineer for a plant in Pittsburgh requiring 105 tons for Wolverine Supply & Mfg. Co. Bourne-Fuller Co. was awarded contracts on about 500 tons of bars last week, including 210 tons for the Western Reserve university medical unit and a stadium in Toledo, O. A hotel building in Cleveland, a city hall in Akron, and various smaller projects are up for figures. On new steel bars 2.30c, Pittsburgh, still is being quoted, although less than 2.35c, Pittsburgh, for small projects is unusual. On bars out of stock, 2.65c, Pittsburgh, is the going quotation, although several of the smaller dealers are attempting to get 2.75c, the former market level. Rail steel bars are firm at 2.10c, mill, with little tonnage in the market to test the strength of that quotation.

CONCRETE CONTRACTS PLACED

Awards this weeks ..... **2,590 tons**
Awards last week ..... **3,680 tons**
Awards two weeks ago ..... **3,825 tons**

400 tons, stadium at the University of Minnesota, Minneapolis, to the Concrete Steel Co.
300 tons, Martha Realty building at Kansas City, Mo., to the Kansas City Bolt & Nut Co.
300 tons, Michigan Central railroad grade crossing work at Spring Wells, Mich., to the Kalman Steel Co.
280 tons, St. Marys college, South Bend, Ind., to Joseph T. Ryerson & Son, Inc.
230 tons, coal pocket for Holyoke Gas & Electric Co., Holyoke, Mass., to Kalman Steel Co.
210 tons, babies and maternity hospital units, Western Reserve university medical group, Cleveland, to Bourne-Fuller Co.
200 tons, upset rods for penstock for Southern California Edison Co., San Francisco, to Judson Mfg. Co.
160 tons, stadium for Scott high school, Toledo, O., to Bourne-Fuller Co.
160 tons, road paving work for Polk county Iowa, to Des Moines Steel Co.
125 tons, Y. M. C. A. building at Green Bay, Wis., to the Concrete Engineering Co.
125 tons, office building for Pacific Telephone & Telegraph Co., Sacramento, Cal., to Gunn, Carle & Co.
100 tons, Kimball Trust & Savings Bank building, Chicago, to the Barton Spider Web System.

CONCRETE CONTRACTS PENDING

775 tons, Metropolitan Theater building, Los Angeles; bids in.
618 tons, Western Costume Co., Los Angeles; bids in.
500 tons, Hilliard road bridge, Cleveland; plans out. Bids in April 28.
400 tons, manufacturing plant in the Mahoning valley territory; bids being taken.
375 tons, plant addition at Homewood, Pa., for Westinghouse Electric & Mfg. Co.; may be indefinitely postponed.
300 tons, stove factory in Chicago for A. J. Lindemann & Hoverson Co., Milwaukee; bids to be asked in several weeks.
200 tons, foundry addition for a manufacturer in the Pittsburgh district; bids being taken.
182 tons, Brunswick Drug Co., Los Angeles; bids in.
140 tons, Lake Cushman power project, Tacoma, Wash.; bids in March 29.
110 tons, Footes Transfer & Storage Co., San Pedro, Cal.; bids in.
105 tons, plant addition for Wolverine Supply & Mfg. Co., Pittsburgh; H. K. Ferguson Co., engineer.
100 tons, Claremont apartments, Chicago; plans out in two weeks.

Appointment of a receiver of the Midwest Engine Co., Indianapolis, rebuilders of railroad equipment has been asked in a suit instituted by the Crane Co. of Chicago. Assets of the company are said to be considerably in excess of $4,000,000 in value while liabilities amount to about $3,000,000. The corporation is a reorganization of the Midwest Engine Co. which went through a receivership two years ago.

Pipe Mill

Operations At High Rate—Large Tonnage of Cast Pipe Sought

PIPE PRICES, PAGE 829 AND 884

Pittsburgh, March 25.—Sustained buying of buttweld pipe keeps sellers well satisfied with tubular goods business. Deliveries are about five weeks deferred on some sizes. Practically all of the buttweld mills are active. Shipments to jobbers continue to be made at an unusually high rate and consumption all over the country for small buildings such as houses and apartments is uninterrupted. Improvement is being experienced by sellers of oil country goods, chiefly lapweld. No specific inquiries for line pipe are before the trade here although on some for exceedingly large tonnages action still is deferred. These probably will be placed late this spring or early this summer.

Wrought iron pipe makers report that while backlogs are not large, business keeps coming in each week at a rate which enables them to sustain operations at a high level, which has been possible for some weeks past.

Boiler tubes are slightly more active and some orders for mechanical tubing are being received each week. No price changes are noted.

Private Demand Dominates

New York, March 25.—Private demand is still the dominating factor in the local cast iron pipe market. There is some municipal business, but it has not as yet developed on the scale that was expected. This is true with regard to the New England municipalities, which so far this year have figured on relatively little tonnage. As noted last week, general contractors bids go in on March 26 on 2000 tons of 30-inch pipe for the local water department.

Low Bidder on 5400 Tons

Chicago, March 25.—The United States Cast Iron Pipe & Foundry Co. is low bidder on 5400 tons of cast iron pipe for the city of Chicago but award will be deferred for a week or 10 days. The National Cast Iron Pipe Co. has taken nearly 2200 tons in three awards. April and May will see many small cities in the Middle West voting upon bond issues for various-sized waterwork system extensions. The quotation on 6-inch pipe continues $57.20 to $58.20, Chicago, and on 4-inch $61.20 to $62.20, Chicago.

Trade Is Brisk

Birmingham, Ala., March 24.—Cast iron pipe trade is brisk in the Birmingham district. Production is being increased. Soil pipe makers are discussing another advance in prices. The $60 price for standard pipe is reported firm.

CAST IRON PIPE PLACED

2700 tons, 10 and 24-inch class C pipe for Los Angeles, to Grinnell Co. for Belgian

made pipe.
1700 tons, Berkeley, Mich., to the National Cast Iron Pipe Co.
1695 tons, 42-inch pipe for Hetch Hetchy project, San Francisco, to United States Cast Iron Pipe & Foundry Co.
1638 tons, 20-inch class B pipe for Los Angeles, to Grinnell Co., for Belgian-made pipe.
500 tons, Bayonne, N. J., to Warren Pipe & Foundry Co.
368 tons, Los Angeles, to American Cast Iron Pipe Co.
358 tons, Dallas, Tex., to American Cast Iron Pipe Co.
350 tons, Minneapolis, to the United States Cast Iron, Pipe & Foundry Co.
350 tons, Festus, Mo., to the American Cast Iron Pipe Co.
315 tons, Magee, Miss., to American Cast Iron Pipe Co.
225 tons, Manitowoc, Wis., to the National Cast Iron Pipe Co.
220 tons, Arkansas City, Kans., to the National Cast Iron Pipe Co.
107 tons, Seattle, to American Cast Iron Pipe Co.

CAST IRON PIPE PENDING

7361 tons, 4 to 24-inch class B pipe for Santa Monica, Cal.; bids opened but no awards as yet.
1127 tons, 4 to 12-inch class B pipe for Glendale, Cal.; bids in.
300 tons, 4 to 10-inch class B pipe for Wapato, Wash.; bids opened, no award as yet.
250 tons, Riley, Kans.; plans out shortly.
Tonnage unstated, Cushing, Okla., to vote on $500,000 bond issue.

Sheet Sales Drop, Output Gains in February

Sheet sales in February as reported by the National Association of Sheet & Tin Plate Manufacturers totaled 189,081 tons, representing 66.3 per cent of the capacity of the mills reporting. The sales for January were 234,858 tons, representing 74.8 per cent of capacity.

February production was 275,118 tons, or 96.5 per cent of capacity, compared with 274,097 tons, or 87.2 per cent of capacity in January. Shipments in February also showed an increase over those of January. The tonnage was 249,859 compared with 228,660. Further comparisons are given as follows:

	Net tons, Feb., 1924	Per cent of capacity	Net tons, Jan., 1924	Per cent of capacity
Sales	189,081	66.3	234,858	74.8
Production	275,118	96.5	274,097	87.2
Shipments	249,859	87.6	228,660	72.8
Unfilled tonnage, March 1 and Feb. 1	434,145	152.3	471,053	150.0
Stock awaiting shipment first of following month	82,362	28.9	79,528	25.3
In stock, unsold, first of following mo.	30,658	10.7	37,541	12.0

The total number of hot mills in the United States is 679, having a capacity for February of approximately 392,000 net tons, and the percentage of the capacity to which the foregoing figures pertain is 72.7 per cent. The following gives a comparison of sales, production, and shipments, in net tons, as reported to the National association:

	Sales	Production	Shipments
Feb.	189,081	275,118	249,859
Jan., 1924	234,858	274,097	228,660
Dec.	349,446	155,229	188,600
Nov.	165,491	188,144	199,836
Oct.	185,110	225,714	230,820
Sept.	223,556	185,577	205,772
Aug.	116,659	234,112	234,486
July	92,358	174,910	192,261
June	172,637	218,432	233,128
May	242,624	260,006	278,059
April	183,904	254,808	253,563
March	325,526	279,475	287,203
Feb., 1923	253,197	237,919	217,808

Sheet Market Is Irregular

Some Makers' March Sales Largest Since October; Others Cutting Prices—Eastern Mills Compete at Chicago—Ford Buying

SHEET PRICES, PAGE 829

Pittsburgh, March 25.—Leading sheet manufacturers in this district say March will be the largest selling month since last October. The business consists namely of spot sales although several contracts have been written for the second quarter. Most sheet buyers are purchasing on a hand-to-mouth basis, and practically all grades of sheets are sharing in the activity. Considerable electrical sheet business has been accepted. Black and galvanized tonnage is being received from various manufacturing lines. Demand for blue annealed sheets for small portable oil tanks and other uses has been active. The practice of most buyers of full-finished sheets has been to order as needed. This has been so extensive that deliveries now are from three to four weeks deferred.

Operations among the sheet mills average around 90 per cent. Some plants running 78 per cent last week plan to increase by 4 per cent this week. Others are operating around 95 per cent of capacity. The American Sheet & Tin Plate Co. appears to be obtaining a large share of the going business, notwithstanding the fact that lower prices generally are obtainable elsewhere, at least to the extent of $2 per ton. In blue annealed, concessions around $3 per tons have again appeared as well as in full-finished. The American company's figures are 3.00c, 3.85c, 5.00c and 5.35c, base Pittsburgh, on blue annealed, black, galvanized and full finished, respectively. Black and galvanized can be obtained in several directions at 3.75c and 4.90c, respectively, while blue annealed is available at 2.90c and from one or two makers at about 2.85c, base Pittsburgh. Independent makers of full-finished automobile sheets are inclined to ask more of large Michigan automobile makers who obtained preferential figures in the first quarter, as low as 4.90c. Some quoted at 5.00c minimum for that period, while others obtained 5.10c; one or more preferential customers taking large tonnages. They now are endeavoring to maintain a minimum of 5.20c for the second quarter, or $3 per ton below the regular 5.35c, base Pittsburgh market.

More Competition Appears

Chicago, March 25.—Competition for black and galvanized sheets in this territory became unexpectedly pronounced in the past week. Makers to the east displayed a decision to take some business here, and to meet this condition some local makers dropped back from 5.00c, Pittsburgh, for galvanized and 3.85c, Pittsburgh, for black. Barring these instances the 5.00c and 3.85c prices have held. Blue annealed sheets suffered only through sympathy. Incoming business last week about offset shipments. Japanese business has not yet put in its appearance. The leading local interest is comfortably booked for the second quarter at the level that held through the first quarter.

Valley Market Quieter

Youngstown, O., March 25.—Tendency toward quieter conditions is noted in the sheet market this week. Consumers are making little effort to contract for the second quarter, in view of present conditions permitting reasonably prompt delivery. Sufficient business is coming out, however, to keep mills operating at about 85 per cent of capacity, though the volume of business will not permit the accumulation of tonnage beyond two weeks. As sheet stocks are low producers hope inquiry will continue to develop into sufficient business to permit the continuation of current operating schedules. Competition is keen, and while some mills regard the market as 3.85c for black and 5.00c for galvanized, a large portion of the going business is being closed at 3.75c, 4.90c, Pittsburgh. In the high-grade sheet market the tonnage being placed merely covers present requirements, and not much effort is being made to purchase far ahead. Parts makers find it difficult to obtain releases from automobile builders and hence have pared down their purchases to the minimum. The Ford Motor Co. was to have closed on about 15,000 tons of automobile sheets last week but what action was taken could not be learned. The high-grade market continues firm at 5.35c for No. 22 gage, Pittsburgh.

Shipments Exceed Bookings

Philadelphia, March 25.—While sheet mill operations in the East are maintained at 75 to 90 per cent, new bookings are only fair, consumers continue to order hand-to-mouth, and shipments exceed bookings. Shading is more apparent. Blue annealed is 2.90c to 3.00c, Pittsburgh; black 3.75c to 3.85c, and galvanized 4.90c to 5.00c.

Imports More Varied

Philadelphia, March 25.—Imports of iron and steel and ores into this port for the two weeks ended March 22 were more varied than in previous weeks and consisted of: 1000 tons of pig iron from India; 30 tons of ferromanganese from England; 371 tons of iron ore from England, 592 tons from Spain and 7293 tons from Sweden; 1500 tons of manganese ore from India; 750 tons of steel blooms from Belgium and 50 tons of bar iron from Sweden.

Order New Mill Equipment

Plans have been completed for a new 14-inch continuous mill to be built at the Aliquippa works of the Jones & Laughlin Steel Corp. The contracts for the mill equipment still are pending but orders for a large portion of the motor and other electrical equipment, involving in excess of a million dollars, are understood to have been placed with the General Electric Co., Schenectady, N. Y. A feature of the mill is that each stand will be driven by a single motor.

Shape Buying Sustained

Unusual Quantity of Small Tonnage Projects Maintains Awards At High Level—Architects' Boards Swamped With Spring Building Program

STRUCTURAL SHAPE PRICES, PAGE 829

New York, March 25.— The week's activity in structural shapes is featured by an award of 18,500 tons for the Philadelphia-Camden bridge and an inquiry for 8000 tons for lift spans for the Newark bay bridge of the Central Railroad of New Jersey, reported in a recent issue as coming out shortly.

The steel for the Philadelphia-Camden bridge went to the American Bridge Co., on a bid of $2,888,000, as against $2,926,710 submitted by the McClintic-Marshall Co. and $3,393,917 by the Bethlehem Steel Co. On the suspenders and cable bands for this project, the Keystone State Construction Co. was low with a bid of $404,850 and the Underpinning & Foundation Co. next, with a bid of $414,000.

While not nearly as large, several sizable projects have been either inquired for or placed and the market appears more active than for some time. Prices on plain material and fabricated shapes although fairly firm, are showing no particular strength.

Backlogs Well Filled

Boston, March 25.—Leading structural steel fabricators have good backlogs and while mill prices are soft there is a firmer tone apparent in this district in fabricating and erecting quotations. The feature of the market at present is the new Statler hotel for which bids close April 1. Plans call for from 6000 to 7000 tons and mill prices against this business are expected to go as low as 2.25c, Pittsburgh. Sales at 2.30c were made last week.

Buyers Postpone Closing

Philadelphia, March 25.—There is a pronounced disposition here among structural shape consumers to postpone buying wherever possible. Mill bookings consequently do not equal shipments. Operations so far have been unaffected and continue at 75 to 80 per cent of capacity. Prices of plain material continue from 2.25c to 2.40c, Pittsburgh, depending upon the attractiveness of the business.

Buyers Looking for Concessions

Pittsburgh, March 25.—Buyers of structural shapes among the fabricating jobbers are endeavoring to develop lower quotations than the quoted figure. In this situation actual orders are few. Fabricators are making low bids on material fabricated and erected and some are getting anxious as shops are catching up on backlogs. While there has been an occasional concession under the 2.40c, base Pittsburgh, figure on plain material, some mills will not shade the 2.50c level locally and 2.40c to 2.50c continues the quoted market spread. Jobs being figured are small and larger projects are being deferred for the time being. Considerable transmission tower work still is pending. Bids will be opened April 22 by the United States engineers at Florence, Ala., on the furnishing and erection of 58 structural steel regulating gates at the Wilson dam in the Tennessee river.

Few Large Projects Out

Cleveland, March 25.—Few large projects involving structural shapes now are in the market. Small inquiries continue to flow to the fabricator's estimating departments in good quantity but jobs calling for more than 50 tons each are scarce. H. K. Ferguson Co., engineer, soon will be in the market for about 1000 tons of shapes, the main project calling for 700 tons for the Continental Gin Co., Birmingham, Ala., which probably will go to a southern fabricator. Bethlehem sections will be used in the Buhl building, Detroit, most of the 5500 tons, let to Russell Wheel & Foundry Co. being so specified. Plain material prices continue firm at 2.50c, Pittsburgh, although some weakness is still noticeable in fabricated quotations.

More Large Jobs Out

Chicago, March 25.—Last week was more marked by the debut of large projects than by actual awards. Local fabricators received plans for two West coast bridges calling for a total of 21,000 tons of structural material. Two office buildings heretofore not mentioned and harbor work at Los Angeles contemplate the use of 7600 tons. A large tonnage is in a bridge at Harrisburg, Oreg., calling for three 180-foot spans with a draw. It is reported that bids for the Palmer house, estimated at 17,000 tons, were unsatisfactory and the project may be refigured. The boards of local architects still are cluttered with jobs that cannot quite reach the letting stage, but in every instance it seems that the clearing up of one or two slight obstacles will effect their release. One impediment may be removed on April 25 when a new building trades council is to be set up in place of the two present conflicting councils. Next to bars, shapes are the most active of the finished steel lines. The plain material price is 2.60c, Chicago.

Bids are being asked by the sewerage commission of Milwaukee, Wis., until March 28, for furnishing 64,000 structural steel T-bars, delivered at the Jones Island sewage disposal plant.

Heavier Awards Expected

Cincinnati, March 25.—structural steel awards in this vicinity have been small in recent weeks, but a feeling of cheerfulness over pending contracts is apparent. Projects let last week will not exceed 2000 tons but from reports more than 10,000 tons for industrial needs is about to be let. The new home for the Columbian Building & Loan association, Columbus, O., involving 400 tons was awarded Fort Pitt Bridge Works, while the 1200 tons for the warehouse project of the Peoples' Light & Gas Co., at Louisville, went to the Louisville Bridge Co. Bids went in today on the addition to the Lunkenheimer Co.'s plant at Elmwood, O., which will require about 650 tons. The price on plain shapes remains at 2.50c base Pittsburgh.

STRUCTURAL CONTRACTS PLACED

Building awards this week ..... 41,991 tons
Building awards last week..... 24,656 tons
Building awards two weeks ago.... 21,406 tons

18,500 tons, stiffening trusses and floor of the Philadelphia-Camden bridge, Philadelphia, to the American Bridge Co.

5500 tons, Buhl building, Detroit, to the Russell Wheel & Foundry Co.; practically all Bethlehem sections to be used.

2400 tons, Bush street office building of Pacific Telephone & Telegraph Co., San Francisco, to Dyer Bros. Structural Steel Co. and Golden Gate Iron Works.

1800 tons, Medico-Dental building, Post and Mason streets, San Francisco, to Moore Drydock Co.

1200 tons, warehouse for Peoples Light & Gas Co., Louisville, Ky., to Louisville Bridge Co.

1164 tons, Soo Line ore dock, Ashland, Wis., to American Bridge Co.

1100 tons, 850 tons for seven switching stations and 250 tons for cross arms for Virginian railway. Gibbs & Hill, engineer. Bids in on latter tonnage March 25.

980 tons, school No. 77, New York, to Hinkle Iron Co.

800 tons, store addition for A. I. Namm Sons, Brooklyn, N. Y., to American Bridge Co.

726 tons, highway bridge at Pembina, N. D., to Lakeside Bridge & Steel Co.

650 tons, building at 208 West Thirtieth street, New York, to Hinkle Iron Co.

650 tons, power unit for the state of New Jersey, at Morris Plains, N. J., to American Bridge Co.

500 tons, Pitt river No. 3 power house for Pacific Gas & Electric Co., San Francisco, to Judson Mfg. Co.

424 tons, two tanks, Wilmington, Cal., for S. Reid Holland, to the Western Pipe & Steel Co.

400 tons, building for the Consolidated Brick Co., Horseheads, N. Y., to Lackawanna plant of the Bethlehem Steel Co.

400 tons, 4-story building, Columbian Building & Loan association, Columbus, O., to Fort Pitt Bridge Works.

380 tons, Ashley river bridge, Charleston, S. C., to Phoenix Bridge Co.

380 tons, Washington school auditorium, Hammond, Ind., to A. Bolters' Sons.

348 tons, two highway bridges, Snohomish county, Washington, to American Bridge Co.

300 tons, power house for the Gillette Safety Razor Co., Boston, to Boston Bridge Works.

300 tons, addition to the Union station, Washington, D. C., to Belmont Iron Works.

300 tons, numerous small awards in Pittsburgh district, to Pittsburgh-Des Moines Steel Co.

250 tons, building for the Standard Plate Glass Co., Butler, Pa., to Fort Pitt Bridge Works.

190 tons, buildings for Glidden Co. of Maryland, to McClintic-Marshall Co.

175 tons, bridgework for the Long Island railroad, 125 tons, to Shoemaker Bridge Co. and 50 tons to McClintic-Marshall Co.

150 tons, bridge for Pennsylvania railroad, to American Bridge Co.

150 tons, Marine Biological laboratory, Woods Hole, Mass., to New England Structural Co.

150 tons, building for Showers Bros. Co., Bloomington, Ind., to Massillon Bridge & Structural Co. H. K. Ferguson Co., engineer.

150 tons, miscellaneous work, Pittsburgh area, to Jones & Laughlin Steel Corp.

140 tons, building for Castile Mining Co., Ramsay, Mich., to the Worden-Allen Co.

140 tons, Ohio river lock No. 46, Louisville district, to Lakeside Bridge & Steel Co.

135 tons, addition to the factory of Maytag Washing Machine Co., Newton, Iowa, to Des Moines Steel Co.

130 tons; additions to office building, American Radiator Co., Buffalo, N. Y.; to R. S. McMannus Steel Construction Co.

125 tons, building for University of South Dakota, Vermilion, S. Dak., to the Paxton-Vierling Iron Works.

125 tons, bridge for Pennsylvania railroad, to American Bridge Co.

125 tons, Hancock-Sullivan Bridge, Springfield, Mass., to American Bridge Co.

120 tons, bridge for the Wilmington branch of Reading railroad, to McClintic-Marshall Co.

114 tons, building for the Locke Insulator Co., Baltimore, to Belmont Iron Works.

110 tons, Bennett hall, University of Pennsyl-

vania, Philadelphia, to American Steel Engineering Co. Eighty-five tons of concrete reinforcing bars also let to that company.
110 tons, addition to slag reclamation plant for McKinney Steel Co., Cleveland, to McClintic-Marshall Co.
100 tons, grain storage building for Maritime Milling Co., Buffalo, N. Y., to Bancroft Jones Co.
100 tons, Masonic temple, Uniontown, Pa., to McClintic-Marshall Co.

STRUCTURAL CONTRACTS PENDING

16,000 tons, bridge at Crockett, Cal.; pending.
8000 tons, lifts for Newark Bay bridge of the Central Railroad of New Jersey, noted in a previous issue as coming out shortly; now up for bids.
6000 tons, Statler hotel, Boston; bids close April 1.
5000 tons, bridge at Portland, Oreg.; pending.
3600 tons, harbor work at Los Angeles; pending.
2000 tons, building for New Republic bank, Dallas, Tex.; pending.
2000 tons, building for Southern California Telephone Co., Los Angeles; pending.
1600 tons, building for the knit goods trade, Broadway and Worth street, New York; pending.
1500 to 1800 tons, Burnside street bridge, Portland, Oreg.; bids in April 1.
1000 tons, tank work for Standard Oil Co., New Orleans; pending.
1000 tons, warehouse for L. Bamberger Co., Newark, N. J., temporarily postponed.
1000 tons, power plant, bids asked through Stone & Webster, Boston, Mass.; pending.
900 tons, Belmont avenue bridge, Youngstown, O.; bids being taken.
800 tons, Hart building, Sacramento, Cal.; bids being taken.
650 tons, foundry addition, Lunkenheimer Co., Elmwood, O.; pending.
600 tons, manufacturing building, Elizabeth, N. J.; bids asked.
600 tons, Stockton Savings & Commercial Bank building, Stockton, Cal.; bids in.
600 tons, hotel for Joseph Segal, 308 West Thirtieth street, New York; bids to be asked shortly.
500 tons, Lake Cushman project crossing towers, Seattle; pending.
500 tons, addition to a woolen mill, Woonsocket, R. I.; bids asked.
500 to 600 tons, city pier, Charleston, S. C.; pending.
500 tons, Wright & Broman department store building, Uniontown, Pa.; bids being taken.
450 tons, Sellwood bridge, Portland, Oreg.; bids in April 1.
400 tons, loft building for A. Smith, 25-7 West Twenty-sixth street, New York; pending.
300 tons, loft at Forty-third street and Eighth avenue, New York; pending.
300 tons, building for General Baking Co., New Haven, Conn.; pending.
300 tons, industrial exposition building, Newark, N. J.; bids out in about one month. Will be largely concrete reinforcing bars.
300 tons, loft, Twenty-sixth street, New York; pending.
300 tons, hotel, Portland, Me.; bids being taken.
275 tons, hotel at Eddy and Jones streets, San Francisco; bids in.
250 tons, bridge work for New York Central railroad; bids asked.
150 tons, parochial building, 165th and St. Nicholas streets, New York; pending.
150 tons, gymnasium for St. Francis Xavier school, Fourteenth street, New York; pending.
100 tons, building for United Gas Improvement Co., Syracuse, N. Y.; pending.
Tonnage unstated, bridge over Williamette river, Harrisburg, Oreg.; three 180-foot spans with draw; bonds to be voted on in May.
Tonnage unstated, H. Y. P. club house, Chicago, possibly 300 tons; plans out in two weeks.

Japanese Government Buys Steel Sheet Piling

New York, March 25.—The Bethlehem Steel Export Co. has received an order from the Mitsubishi Shoji Kaisha Ltd., for 500 tons of sheet piling for the imperial government of Japan. A new inquiry also has come out from the reconstruction board of Japan for 800 tons of sheet piling.

No action yet has been take on the rail tonnages under negotiation for the Keikin Electric Tramway and for the Island of Formosa.

Roads Again Buy Rails

Great Northern Closes on 25,000 Tons in Chicago District—Car Buying Continues Numerous But Is Restricted Mainly to Small Lots

RAILROAD TRACK MATERIAL PRICES, PAGE 829

Chicago, March 25.—The Great Northern railroad has placed orders for approximately 25,000 tons of steel rails without preceding this business by an inquiry. It is understood that the Bethlehem Steel Co. was allotted 12,500 tons, with the remainder about equally divided between the Illinois Steel Co. and the Inland Steel Co. The leading maker in this district last week booked a total of about 25,000 tons of rails. It is rumored that the Southern Pacific railroad will be a buyer shortly. The independent rail maker here is booked up to October.

The rail orders placed last week were generally accompanied by the customary track fastening business. The leading interest last week booked a total of 3500 tons of angle bars, spikes and bolts. Small track fastening inquiry is pending.

Car awards last week were numerous but small, being passenger cars mostly.

Ryan Car Co. has booked orders for car parts requiring about 1000 tons of finished steel.

Roads Buy Track Accessories

Boston, March 25.—Buying of frog and switch material continues along encouraging lines and miscellaneous fastenings and material for railroads is in fair demand. Electric railroad buying so far this year is somewhat below that of the past year, but steam road orders other than rails have been heavier in 1924 than during the corresponding period in 1923.

Car Buying Scattered

New York, March 25.—Car buying last week was scattered, the total placed falling well under that of the preceding week. Inquiries also have fallen off. With the business still pending and under contemplation, some fair trading should develop over the near future. Business in March will undoubtedly be well under the volume placed in February, but will comprise a fairly good total.

Locomotive buying last week was featured by the placing of 25 locomotives by the Southern railroad. Of this number, 20 switch engines went to the American Locomotive Co., and five mallet type locomotives to the Baldwin Locomotive Works.

The Chesapeake & Ohio railroad now in the market for more than 5000 cars, also contemplates the purchase of 50 locomotives. Other business pending includes six locomotives for the El Paso & Southwestern; 25 for the Florida East Coast and one switch engine for the Commonwealth Steel Co. Minor orders include one locomotive for the Pittsburgh & West Virginia and one for the Wabash, both going to the American Locomotive Co. A Shea type locomotive has been purchased by the Pacific States Lumber Co., from the Lima Locomotive Corp.

The Great Northern railroad has placed 25,000 tons of rails, of which 12,500 tons will be rolled by the Illinois Steel Co. and 12,500 tons at the Lackawanna plant of the Bethlehem Steel Co.

The Northern Pacific railroad has placed 10,000 tons of rails with the Illinois Steel Co.

Few Carloads Being Placed

Pittsburgh, March 25.—A few carload orders for light rails are being placed each week by coal companies which are maintaining rather indifferent operating schedules. Some of these are filling their wants with rail-steel light rails, one or two single carload orders being noted last week at 1.90c, base Pittsburgh, against 1.85c, the prevailing figure two or three weeks ago. New steel light rails are unchanged at 2.00c to 2.15c, base Pittsburgh.

No outstanding orders have been placed for track accessories. Makers still operate practically full on their backlogs and are filled up for a few months to come. Prices are unchanged on the quoted bases.

Old Rails Bought

Detroit, March 25.—The Detroit, Toledo & Ironton railroad has bought 8000 tons of 100-pound old rails from dealers which it will use for replacements. This road is in the market for six switching locomotives and 50 to 60 ballast cars.

CAR ORDERS PLACED

Union Refrigerator Transit Co., Milwaukee, Wis., 250 refrigerator cars, to own shops.
Richmond, Fredericksburg & Potomac, 15 ballast cars, to Rodger Ballast Car Co.
Seaboard Air Line, 25 ballast cars, to Rodger Ballast Car Co.
Northern Refrigerator Co., 500 refrigerator cars, to the Pullman Co.
Atchison, Topeka & Santa Fe, six coaches, to the Pullman Co.
Virginian railway, one coach, to the Bethlehem Shipbuilding Corp.
International & Great Northern, 10 coaches and baggage cars, to American Car & Foundry Co.
Fruit Growers Express, 1000 steel underframes, to Western Steel Car Co., and 100 to the Cambria Steel Co.
Southern railroad, 2000 box cars, reported awarded to American Car & Foundry Co.

CAR ORDERS PENDING

Elgin, Joliet & Eastern, 500 coke cars; pending.
Florida East Coast, 200 ventilated box cars, 250 rock cars, 100 ballast cars, 20 caboose cars; bids expected out shortly.
Chesapeake & Ohio railroad, 15 express cars and 4 diners; pending.
Nickel Plate railroad, 12 coaches and baggage cars; reported last week as seven cars pending.
El Paso & Southwestern railroad, 3 buffet-baggage and 1 to 3 diners; pending.
Detroit, Toledo & Ironton, 50 to 60 ballast cars; pending.

Tin Plate Plant Damaged

Fire on March 22 damaged the tin house in the tin plate plant at Yorkville, O., of the Wheeling Steel Corp., Wheeling, W. Va. The tin house contained 41 pots of melted tin which caused explosions when falling water came into contact with the molten metal. Operations will not be stopped at the plant, although severely curtailed.

The Nonferrous Metals

London Prices Again Break and Cause Weakness Here but Most Producers Take Waiting Attitude

	Copper—Electro delivered	Copper—Lake delivered	Spot tin Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Spot nickel
March 19....	13.62½	14.00	54.25	9.00	6.40	28.00	11.25	28.00
March 20....	13.67½	14.00	57.25	9.00	6.40	27.50	11.25	28.00
March 21....	13.75	14.00	56.00	9.00	6.50	27.00	11.50	28.00
March 24....	13.75	14.00	53.50	9.00	6.37½	27.00	12.00	28.00
March 25....	13.75	14.00	52.75	9.00	6.37½	27.00	12.00	28.00

†Outside market quotation.

NEW YORK, March 25.—The nonferrous metal markets have been affected by violent fluctuations in London during the past two weeks, tin being the storm center. Weak bull accounts have been liquidated on a large scale with the result that London tin prices declined about £36 between March 12 and March 24. Prices in New York dropped accordingly about 7 cents on futures. The tumble in London values began with the rise in the franc after the Morgan loan was announced. German and other foreign dealers were forced to liquidate long accounts in metals and other commodities to get cash to cover their short interest in francs.

American prices have declined somewhat in sympathy with the foreign market, though not actually demoralized, as large producers of copper, zinc and lead have maintained a firm position. Electrolytic copper declined to 13.62½c, delivered, last week, after selling at 14c early in March, subsequently recovered to 13.75c, then eased again because of renewed weakness in London. Casting copper sold down to 13.37½c, refinery. Composition ingot and secondary materials have been in extremely light demand, with prices easy.

Zinc prices declined ⅛ cent this week to 6.37½c, East St. Louis, as of March 24, for prompt and April shipment, due to decline in London prices, though costs have been increased by an advance in ore prices to $41 and higher. Galvanizers have shown little interest.

The outside lead market has eased to 8.75c, East St. Louis, and 9c New York for prompt, April and May shipments. The American Smelting & Refining Co. maintained its contract price of 9c, New York, though successive declines in the London market have been bringing closer the possibility of imports of continental lead under the contract price.

Antimony prices have advanced sharply. Sales of spot antimony were made March 24 at 12c, duty paid. The Orient is asking up to 11.25c in bond.

Resale lots of 98 to 99 per cent virgin ingot aluminum have been offered at the same price as quoted by the domestic producer, 27c. Foreign virgin ingot, 98 to 99 per cent, is quoted 28c for second half delivery. Inquiry for aluminum is light.

Nickel prices are lower. International Nickel Co. now is quoting electrolytic 30c and shot and ingot 28c. Outside sellers are quoting 25c to 27c for shot and ingot.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 4 oz., min..	21.75
High brass	18.25
Zinc, ga. 9 to 18 (plates ½c less)	9.75
Lead, full sheets (cut ¼c more).	12.50
Aluminum, base 18 ga. and up...	36.40
SEAMLESS TUBES	
High brass	22.50
Copper	23.75
RODS	
High brass, round, ⅝ to 2½-inch	16.00
Naval brass rods	18.75
WIRE	
Copper	16.00 to 16.50
High brass	18.75

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.75 to 10.00
New York	8.75
Chicago	9.25
HEAVY YELLOW BRASS	
New York	6.00 to 6.50
Chicago	7.00
Cleveland	6.00 to 6.25
ZINC	
New York	4.00 to 4.50
Cleveland	4.00
Chicago, dross	4.50
HEAVY COPPER AND WIRE	
Cleveland	11.25
New York	10.75
Chicago	10.75 to 11.00
RED BRASS TURNINGS	
New York	8.00 to 8.25
Cleveland	8.50 to 9.00
Chicago	8.75
YELLOW BRASS TUBING	
Cleveland	6.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.50 to 6.75
New York	6.75 to 7.00
Chicago	7.00
ALUMINUM BORINGS	
Cleveland	12.50

By-Products Steady

Japan Buys Ammonium Sulphate in Europe—Toluol Scarce

New York, March 25.—Dullness continues to dominate the sulphate of ammonia market. This inactivity is a seasonal development in domestic business, as the fertilizer manufacturers are finding it rather late to purchase sulphate for conversion into fertilizer for the coming season's requirements. In the foreign market dullness may be attributed in a measure to European competition. Japan, undoubtedly the largest prospective buyer, has so far this year purchased several round lots in Europe, particularly in England, while buying little or nothing in this country. These purchases in the aggregate, it is understood, are not large, although they have been a factor and they raise some question as to whether American manufacturers will not encounter almost prohibitive competition from foreign sellers when more business develops. At present the export market is holding nominally at $2.70 to $2.75, f.o.b. port, in double bags. The domestic market also is unchanged at nominally $2.75 to $2.80 works.

Scarcity in toluol and solvent naphtha has resulted in premiums in some quarters, although premiums are not general and the market on these products still may be quoted at 26 cents in tanks to 31 cents in drums and 25 cents in tanks and 30 cents in drums, respectively. The scarcity of these products is attributed chiefly to the fact that to produce a tank lot of either it is necessary to make several tank lots of benzol. Manufacturers do not care to have too much of benzol on hand in view of the strong motor fuel market.

Quotations on benzol continue to hold at 25 cents works in tanks and 30 cents in drums for the pure product and 23 cents in tanks and 28 cents in drums for 90 per cent. Xylol is quoted at 28 cents works in tanks and 33 cents in drums, while phenol is holding around 28 cents works on contracts and up to 30 cents storage on immediate shipments. Naphthalene is unchanged at 6 cents works for flakes and 7 cents for balls.

Coke Oven By-Products

Spot*

Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.25
Toluol	0.26
Solvent naphtha	0.25
Commercial xylol	0.28
Per Pound at Producers' Plants	
Phenol	0.38
Naphthalene flake	0.06
Naphthalene balls	0.07
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.70 to $2.75
Contract	
Pure benzol	Nominal
Toluol	Nominal
Solvent naphtha	Nominal
Commercial xylol	Nominal
Per Pound at Producers' Plants	
Phenol	$0.28
Naphthalene flakes	0.06
Naphthalene balls	0.07

*Spot distillates are subject to shading.

Sell Sizer Steel Corp.

Buffalo, March 25.—Sale of the Sizer Steel Corp., property of the first mortgage bondholders' committee, John N. Pistell, agent, has been confirmed by Federal Judge Hazel. The property sold commanded about $216,000 and included plants at Buffalo and Solvay, N. Y., as well as a quantity of forgings and loose tools. The bondholders' committee is expected to make an effort to dispose of the property for the benefit of all the bondholders. Intangible assets, including accounts receivable, were not sold on March 22 when the mortgaged or tangible assets were disposed of.

Pays High Tribute to Steel Industry

None Other Met Nation's War Demands More Frankly and Fully, Robert S. Brookings Tells House Committee—Discloses How Wilson Considered Taking Over Plants

WASHINGTON, March 25.—Light was thrown on the co-operation by the steel industry in quoting fair prices for its products, and its patriotic willingness to turn over its resources and expand to meet the needs of the government during the world war by the testimony last week of Robert S. Brookings. Mr. Brookings is president of the Washington university; head of the institute of government research and a member of the board of regents of the Smithsonian institute. The testimony was given before the house committee on military affairs in its study of a number of bills for the conscription of industrial power by the government in case of war. Mr. Brookings, who was a former manufacturer, also was chairman of the government price fixing board during the war, and a member of the war industries board, the latter, however, having no jurisdiction over fixing of prices.

In his testimony regarding the steel industry's willingness to co-operate in the maintenance of fair prices, Mr. Brookings said to the committee:

"It is a popular thing, you know, to accuse everybody of profiteering during the war. I started to tell you the history of the United States Steel Corp. in the war. They are jumped upon probably more often than any other one corporation in the world.

"There is no industry that met us more frankly and fully than the steel industry. I told you that President Wilson sent for me because some one had suggested it, and thought steel was so important that we ought to take over the steel industry as we took over the railroads. I know something about railroading. I have been in almost everything in my life; and I know about industry, and taking over the railroads would have been child's play as compared with taking over the steel industry.

"And the attitude of the steel industry was from the beginning—'Now tell us what you want us to do.' I would say, 'I want you to produce all the steel you can, and I want to fix the price, and where you have acquired the highest efficiency in your business, as you have, Judge Gary, and have paid large profits, I want to take what I can in the way of excess profits, and then I want you to do with the balance whatever I say.'

"Their answer was, 'All right.' I said, 'We are going to let you make $500,000,000, this year, and we are going to take about $250,000,000 excess profits to help run the war, and out of the other $250,000,000 we want you to give the stockholders so much, and the balance we want you to put into increased production. We are short of ship plates. We know if you put in fifteen or twenty million dollars in that activity it is going to be dead on your hands, probably, but we want you to do it.'

"And they acquiesced; that was their attitude. A great many of the steel industries had not been making much money; it was the natural consequence of the war. When they made it, then, measured in prewar values, it did not amount to much. Everybody does not stop to think that $100,000 after the war did not mean any more than $50,000 before the war in purchasing power, which, after all, is the true value of money.

"It was not such a frightfully big thing as the people think."

Mr. Brookings also paid high tribute to the patriotic attitude of industries during the war in submission to the power accorded the President under the national defense act, by voluntarily turnings over their resources to the government for use in prosecuting the war. He said he could not recall an industry that had raised an issue concerning the right to commandeer.

"To me, it was a wonderful thing," he said. "When they saw that we took the power and the nation had the need, it was remarkable with what unanimity they agreed. The theory is that the industries had made vast profits during the war, and it essentially applied to the Steel corporation, it probably being the most efficient steel organization in the world—the most thoroughly integrated from the ore in the ground to the greatest refinements in the steel business. But the profits were not as big as they seemed."

Scrap Has Further Loss

(*Concluded from Page 830*)

scrap are lasting longer than originally intended. Consumers of steel scrap are not placing additional orders. One Sharon, Pa. buyer purchased heavy melting steel at $19 and other users nearer by closed on about 1000 tons each at $18 50, but the market lacks real life. Heavy melting steel is quoted at $18.50 to $19.50, the latter paid by a Weirton, W. Va. user. The Monessen, Pa. embargo still is on and will be for another week or so. Railroad lists due today or tomorrow are expected to bring out indifferent bids because not many shorts are to be covered. Steel axles and steel car wheels are down 50 cents. Rails for rolling cannot be sold above $21.50 or $22. Machine shop turnings have sold in small lots at $14.50 to $15 although buyers are not willing to pay more than $14, if that much. Quotations are largely nominal, many representing what dealers are willing to accept for small lots to get rid of them. Yard stocks are low, particularly for this time of year.

Stagnant at Cincinnati

Cincinnati, March 25.—The iron and steel scrap market is stagnant and it is simply a question of waiting until something develops. The mills have bought no heavy melting steel scrap and show no interest. Even heavy breakable cast has been in poor demand. The steel foundries have been buying sparingly and iron foundries have shown little interest. The main point is whether mill operations will continue heavy, for if consumption holds at the present rate there will be large purchases. Practically all grades are $1 a ton lower than a week ago. Heavy melting steel can be picked up without difficulty at $14. Railroad offerings are large and bring new low levels. The C. L. Hils & Co., Cincinnati, was the successful bidder on part of the Chesapeake & Ohio list which aggregated several thousand tons.

Sharp Break at St. Louis

St. Louis, March 24.—The iron and steel scrap market has been under pressure and the price cuts are general, ranging from 50 cents to $2 per ton. The weakness is due to heavy supplies and lack of consumptive buying. The heavy acquisitions by dealers from the railroads in recent weeks are now rolling forward in a deluge which yards and industries are unable to digest. Steel specialties and foundry grades have yielded to the general weakness.

Heavy melting steel dropped to $15.75, and minor sales were reported below that figure. Rails for rolling broke $1 per ton. The movement from the country has been slowed down by the present weakness, and new railroad offerings were in smaller volume. The only lists from the carriers were 500 tons by the Chicago, Indianapolis & Louisville, 10 cars by the Frisco and some small special lists by the Missouri-Pacific.

Market Holding Its Own

Birmingham, Ala., March 24.—The iron and steel scrap market in the Birmingham district is holding its own, dealers not showing much anxiety to sell in great tonnage. Heavy melting steel is practically stationary. The Gulf States Steel Co., the largest purchaser has only three out of six open-hearth furnaces in operation. Cast iron pipe makers still are using No. 1 cast and a brake shoe maker is in the market for stove plate. Dealers have good stocks.

Expansion Program

of Youngstown Sheet & Tube, Large—Annual Report Analyzes Operations

An important program of improvements and new construction has been authorized for 1924 and 1925 by the Youngstown Sheet & Tube Co., according to President James A. Campbell in the company's twenty-third annual report to stockholders. The statement is the first to cover operations of the company since its purchase of the Brier Hill Steel Co. and the Sheet & Tube Co. of America last year, says President Campbell:

"Greater advancement has been made during the last two years than for 10 years preceding in the direction of improved methods and machinery for producing steel and its finished products. The board of directors recognizing this fact, has appropriated a large amount of money to be expended in 1924 and 1925 for the purpose of keeping the plants in the highest state of efficiency."

In addition authorization has been given for a new sheet plant at the Brier Hill works, consisting of eight mills for the manufacture of full-finished sheets for furniture, automobile and similar purposes and for one new blast furnace and two new buttweld tube mills at the Indiana Harbor works. These additions will be completed sometime in the present year.

"Good business for the first half of 1924 seems assured, if the Mellon plan or some legislation similar in effect, is enacted by congress," says President Campbell. "In this event there will be plenty of money for investment in all kinds of business enterprises and present prosperity may be expected to continue."

Net earnings of the company after depreciation and federal taxes amounted to $16,675,750 against $3,706,969 in 1922. The consolidated balance sheet lists the property account of the company at $164,264,368. Current assets were $80,559,913 as of Dec. 31, 1923, with inventories of $53,643,261 and cash and marketable securities of $5,939,670. Current liabilities were $15,367,734 and net working capital amounted to $65,192,179.

Shipments for 1923 totaled 2,946,779 tons of all classes of material. These were made up as follows:

	Tons
Iron and zinc ores, coal and coke	165,360
Pig iron, ingots and scrap	879,454
Rolled steel and other finished products	1,747,189
Miscellaneous materials and coke by-products	154,776
Total	2,946,779
	Gallons
Other coke by-products	30,513,637

The gross volume of business, less inter-company sales, amounted to $165,649,369. Payrolls for the year totaled $43,154,814. During the year the company spent $9,719,130 for maintenance and repairs. The report says:

"Favorable conditions prevailed during the first half of 1923, good demand at increasing selling prices continuing throughout that period. The last half of the year was less favorable. During the third quarter the 12-hour day was eliminated and wages readjusted to the new basis of eight and 10 hours. This materially increased costs."

The company now has operating units in nine states—Ohio, Indiana, Illinois, Michigan, Wisconsin, Pennsylvania, West Virginia, Kansas and Oklahoma. It has mills and manufacturing plants in the first five states named and iron, zinc or coal mines in the others. Connected with the various operations are 26 subsidiaries of which six are engaged in manufacturing, five in the distribution and sale of products, and others in mining iron ore, coal and zinc, operation of railroads, vessels and other activities.

At the end of 1923 the number of iron and steel plants in operation was 15 located as follows: East Youngstown, Struthers, Hubbard, Brier Hill, Niles, Warren, Zanesville, Indiana Harbor, South Chicago, Evanston, Maysville, and Kalamazoo. The number of more important units contained in these 15 plants may be listed as follows: by-product coke ovens, 618; by-product recovery plants, 4; blast furnaces, 17; bessemer converters, 4; open hearth furnaces, 28; blooming and slabbing mills, 4; continuous billet mills, 2; sheet bar mills, 2; sheared plate mills, 3; skelp mills, 6; lap and buttweld tube mills, 20; sheet mills 41; puddle furnaces, 25; merchant bar mills, 4; coupling shops, 2; and foundries 5.

The company has an annual maximum capacity of 2,624,800 tons of pig iron; of 1,836,000 tons of open-hearth ingots; of 1,276,000 tons of bessemer steel ingots; 1,276,000 tons of skelp, 1,142,112 tons of welded pipe; 294,000 tons of sheets; 606,720 tons of plates; 300,000 tons of bars and 120,000 tons of wire and wire products.

Sell Standard Parts Unit

The Standard Welding Co., Cleveland, the largest remaining asset of the Standard Parts Co., was sold by federal court order to the receiver for $625,000 plus 1924 taxes, estimated at $10,000, to Andrew Squire, Cleveland attorney. Competitive bidding resulted in the sale price being $85,000 higher than the first offer. The Standard property comprises about eight acres improved with buildings containing approximately 400,000 square feet of floor space.

Final dissolution papers have been issued the South & Saunders Machine Tool & Engineering Co., Indianapolis.

Valley Operations Lower in All Lines

Youngstown, O., March 25.—Tendency toward quieter conditions is reflected by operating rates this week, five fewer open hearths being in operation at independent plants than a week ago. Of the 51 independent units 37 are active or 73 per cent of capacity. The Youngstown Sheet & Tube Co. is charging 17 open hearths, the Republic Iron & Steel Co. nine, the Trumbull Steel Co., seven and the Sharon Steel Hoop Co., four.

Sheet mill operating schedules receded 4 per cent this week on account of repair work at the plant of the Waddell Steel Co. Eighty-five per cent of capacity is engaged representing 100 of the 117 units. The Youngstown Sheet & Tube Co. has 22 units under power, the Newton Steel Co., 20; the Republic Iron & Steel Co., 14; the Trumbull Steel Co., 13; the Sharon Steel Hoop Co., nine; the Mahoning Valley Steel Co. and the Falcon Steel Co., eight each; and the Thomas Sheet Steel Co., six.

Miscellaneous operation remains practically unchanged. Six finishing and six pipe mills, together with the bessemer department, are engaged at the Republic Iron & Steel Co. The Trumbull Steel Co. has 31 hot tin mills and its strip departments scheduled. Five hot tin mills are active at the Canton, O., division of the Falcon Steel Co. Activity at the Youngstown Sheet & Tube Co. includes 10 pipe, two bar and two plate mills in addition to its rod, wire and bessemer departments.

Active stacks in the district will be increased to 36 out of 45 this week, when the Carnegie Steel Co. will blow in one of its New Castle stacks, which was out for relining.

Hanna Earnings Good

Net earnings of the M. A. Hanna Co., Cleveland, after all interest, depreciation, depletion and federal taxes amounted to $2,062,263 in 1923, according to a report of the company just made public. This compared with dividend requirements on the first preferred stock of $820,000. During the year the company purchased and holds in the treasury $380,000 of the first preferred, reducing the amount outstanding to $11,620,000. Current assets amount to $17,316,889, including $1,175,295 in cash and $900,000 in government securities. Total current liabilities are given as $5,241,020, making a net working capital of more than $12,000,000. Total assets of $49,480,459 are shown.

European Trend Still in Doubt

Dawes Expert Committee Finding It Difficult To Agree, While Political Wrangling Interferes—Continental Mills Full, Those in Britain Seeking Business—Large Tin Plate Sales to South America

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, March 25.—With continental mills generally booked to capacity until June, and British mills still seeking business, fundamental developments indicating the trend of world trade in the second half of the year are awaiting the possibility of a settlement of the reparations issue.

The enthusiastic expectations of a businesslike agreement on the reparations question on the basis of the Dawes negotiations, voiced recently in the United States, may not be realized. It is understood here that the committee of experts is having difficulty in agreeing, and there is danger of the usual European political wrangling interfering with and nullifying the best features of the committe's work. A Normandy steelmaker has sold to an American purchaser 1500 tons of billets at £6 5s ($26.84) f.o.b. India is inquiring in the London market for a considerable tonnage of finished steel. Contracts are being placed for 16 motorships for the Australian meat trade. Large sales of tin plate are being made to South America.

Price changes in the British market this week bring the following products to the levels quoted: Steel bars for home use £9 5s ($39.73); galvanized sheets £18 5s ($77.31); east-coast hematite £4 19s ($21.26); furnace coke for domestic or export shipment £1 6s ($5.58); foundry coke £1 13s ($7.08).

Sterling exchange is figured on a basis of $4.295.

British Pig Iron Lower on Uncertain Future

European Staff Special

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., March 15.—Various unfavorable circumstances have brought a sharp reaction in pig iron, partially reflected in easier prices. For this the labor unrest is mainly responsible. But the low franc value facilitating the dumping of continental pig iron at Glasgow and Middlesbrough has hastened the downward movement. Ten furnaces have been blown out in Scotland and two in Middlesbrough with prices lower in both centers and stocks accumulating. Middlesbrough No. 3 iron is reduced to £4 13s ($19.99) lower than competing brands of Derbyshire, which have for some time been selling in the markets usually served by Cleveland.

It is remarkable that whereas the Middlesbrough shipments are the lowest for two years America heads the list as the largest buyer, taking 3925 tons. The next largest is Belgium, taking 2009 tons. The American total exceeds that of January, which was 3430 tons. The practical collapse of the business with the Continent is naturally taken seriously by Middlesbrough furnacemen. France has only bought 1450 and Germany 1120 tons.

Some revival in buying is reported as some buyers are now practically

Sterling—$4.30

without stocks. French and Belgian iron is still being offered at £4 5s ($18.28) per ton f.o.b. Antwerp, low enough to account for the collapse of the continental trade.

Cleveland makers have the advantage of somewhat easier coke prices, Durham coke costing £1 10s ($6.45) delivered, 10s ($2.15) below a few months ago.

Belgian billets are quoted at £6 15s ($29.02) but with an upward tendency, some firms asking up to £7 ($30.10). English steel billets are at a minimum of £8 ($34.40) with quotations up to £8 10s ($36.55). The rerollers are once more forging ahead with a somewhat undue share of business in bars, skelp, angles, etc., for which they are able to utilize the foreign semifinished steel available. The Staffordshire iron trade is quiet. Makers of marked bars have excellent order books and keep their figure at £14 10s ($62.35). Rollers of medium material are much less fortunate, being only moderately employed and in some cases accepting £12 2s 6d ($52.13) to £12 5s ($52.67) although the standard is £12 10s ($53.75).

Scrap steel is a weak market, sales having been made as low as £4 5s ($18.27), though £4 10s ($19.35) is a more general figure. Wrought iron scrap has become scarce and can be sold as high as £5 12s 6d ($24.18) delivered. The higher value reduces the profits of the iron roller, and increased supplies would be welcome.

The galvanized sheet trade continues well employed with prices ranging from £18 7s 6d ($78.47) to £18 10s ($79.55). But for prompt supplies premiums ranging from 10s ($2.15) to £1 ($4.30) are frequently demanded. The new tonnage is not large, but mills are filled for operations well into the summer.

The Welsh tin plate trade has been favored lately with good orders from South America and the Far East, two important lines being respectively for 200,000 boxes and 150,000 boxes. Some of the works are declining to undertake fresh deliveries this year. The price question has become important in view of the exceptional advance in tin which is now £65 ($279.50), dearer than it was when the present tin plate standard of £1 3s 6d ($5.03) was established. This figure has become nominal, sales generally being at £1 4s 6d ($5.25), and the association is being pressed to adopt this as the official figure. Some firms are obtaining £1 5s ($5.37).

Belgian Makers Well Sold, Quit Market

European Staff Special

BRUSSELS, March 15.—Little buying has been done in iron and steel the past week. Many producers have withdrawn from the market with sufficient orders to keep their mills going until May. They do not wish to commit themselves

Franc—$0.035

further under present uncertain circumstances. It is reported that the Ateliers du Thiriau, at la Crozere, has obtained an order for the furnishing of all the material needed in the installation of a sugar plant in England, for a total price of about 2,500,000 francs ($100,000).

Pig iron prices have advanced considerably since the middle of February.

Current Iron and Steel Prices of Europe

Last Reported Prices Converted into Dollars at Rates of Exchange, March 24

British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace.

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	32.21	7 10 0
Sheet bars	32.21	7 10 0
Wire rods	47.25	11 0 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	39.73	9 5 0
Steel bars, England, ½ to 3-inch, for export	38.66	9 0 0
Plates, ship, bridge and tank, England	40.80	9 10 0
Plates, ship, bridge and tank, England, for export	38.66	9 0 0
Plates, ship, bridge and tank, Scotland	40.80	9 10 0
Plates, ship, bridge and tank, Scotland, for export	38.66	9 0 0
Beams, England	40.80	9 10 0
Beams, England, for export	36.51	8 10 0
Beams, Scotland	40.80	9 10 0
Beams, Scotland, for export	36.51	8 10 0
Sheets, black, 24 gage	55.84	13 0 0
Sheets, black, 24 gage, for export	57.98	13 10 0
Sheets, galvanized, 24 gage	77.31	18 5 0
Rails, 60 pounds and over	38.66	9 0 0
Rails, 60 pounds and over, for export	36.51	8 10 0
Tin plate, base box 108 pounds	5.15	1 4 9
Steel hoops	51.54	12 0 0
Steel hoops, for export	47.25	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.26	4 19 0
Hematite, West Coast, Mixed Numbers	22.76	5 6 0
Basic, Middlesbrough	20.40	4 15 0
No. 3 Foundry, Middlesbrough	19.33	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	20.29	4 14 6
No. 3 Foundry, Northamptonshire	19.54	4 11 0
No. 3 Foundry, Staffordshire	20.19	4 14 0
No. 3 Foundry, Scotch	21.48	5 0 0
Ferromanganese, 76 to 80 per cent	73.02	17 0 0
COKE		
Yorkshire furnace	5.58	1 6 0
Foundry	7.08	1 13 0
Foundry, for export	8.16	1 18 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Pounds per metric ton (2205 lbs.)
PIG IRON		
Hematite	23.84*	5 11 0
Foundry, No. 3	19.97	4 13 0
Stahleisen, Siegen	22.12	5 3 0
Foundry, No. 1	20.40	4 15 0
Luxemburg Foundry, No. 3	18.04	4 4 0
COKE		
Lower Silesian furnace	7.30	1 14 0
Lower Silesian foundry	7.73	1 16 0
SEMIFINISHED STEEL		
Billets	25.98	6 1 0
Sheet bars	28.35	6 12 0
Wire rods	32.86	7 13 0
FINISHED STEEL		
Standard rails	30.49	7 2 0
Merchant bars	29.42	6 17 0
Structural shapes	28.99	6 15 0
Ship plates	32.86	7 13 0
Medium plates, 3 to 5 millimeters	36.08	8 8 0
Sheets, 1 to 3 millimeters	38.44	8 19 0
Tin plate, per box of 575 kilograms	6.34	1 10 0
Plain wire	42.95	10 0 0
Bands and strips	39.51	9 4 0

All prices are f.o.b. furnace or works.

*German prices now are quoted in pounds, sterling.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	27.41	510
Basic bessemer, Lorraine	21.50	400
Foundry, Longwy, No. 3, sand-cast	20.96	390
Foundry, Longwy, No. 3, chill-cast	21.50	400
Ferromanganese, 76 to 80 per cent	99.44	1,850
COKE		
French furnace	7.63	142
German furnace, f.o.b. frontier	7.71	143.5
French foundry	8.44	157
SEMIFINISHED STEEL		
Blooms	27.41	510
Billets	28.76	535
Sheet bars	30.10	560
FINISHED STEEL		
Standard rails	32.25	600
Merchant bars	33.33	620
Angles	32.25	600
Normal beams and profiles	32.29	600
Plates, ship and tank, 10 millimeters and thicker	36.55	680
Plates, bridge and tank, 5 to 10 millimeters	37.63	700
Sheets, black, 3 millimeters	40.31	750
Sheets, blue annealed, 2 millimeters	44.08	820
Shafting, cold-drawn, 40 to 60 millimeters	67.19	1,250
Bars, 2 per cent nickel steel	99.44	1,850

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	20.07	470
Basic open-hearth, Belgian	20.92	490
Gray forge, Belgian	20.71	485
Foundry, No. 3, Belgian	20.71	485
Foundry, No. 3, Luxemburg	17.93	420
Foundry, No. 3, Lorraine	17.93	420
SEMIFINISHED STEEL		
Blooms	27.97	655
Billets	29.68	695
Sheet bars	31.38	735
Wire rods	39.50	925
FINISHED STEEL		
Standard rails	29.68	695
Merchant bars	34.16	800
Normal beams and profiles	32.45	760
Plates, 5 millimeters and thicker	35.65	835
Sheets, black, 3 millimeters	37.36	875
Sheets, galvanized, 1 millimeter	90.74	2.125
Plain wire	59.78	1,400
Galvanized wire	70.46	1,650
Wire nails	63.20	1,480

All prices are f.o.b. furnace or works.

No. 3 foundry pig iron which was then quoted 435 francs ($16.10) has now reached 465 francs ($17.20) f.o.b. furnace. Furnace coke is now 190 francs ($7) per metric ton, as against 195 francs ($7.20) previously. Merchant bars are offered for export at £6 15s ($29) f.o.b. Antwerp, the home price being about 775 francs ($28.65). Beams are quoted at 750 francs ($27.75) per metric ton on the home market and £6 5s ($26.90) f.o.b. for export; English standard beams have been offered at £6 7s 6d ($27.40).

Wire rods are quoted at £8 10s to £8 15s ($36.55 to $37.60) f.o.b. and at 900 francs to 925 francs ($33.30 to $34.20) in the home market. Hoops for export have been offered at £9 15s to £9 17s 6d ($41.90 to $42.45). Basic bessemer plates range from £7 10s to £7 15s ($32.25 to $33.30). Galvanized wire products have advanced 50 francs ($1.85) a ton on account of the increased price of zinc

French Production Gains

European Staff Special

Paris, March 15.—Iron and stel production in France continues to gain and figures for January, 1924, are the highest since the war. Feb. 1, 134 furnaces were blowing in France against 125 Dec. 1, 1923. Stacks in working order numbered 42 and 43 were under repair or in course of construction. During January nine units were blown in, two in the eastern district, five in Alsace-Lorraine and two in the Center. This is 18 furnaces more than were operating one year ago. January pig iron output was 585,978 metric tons, 21,323 tons more than during December. Basic bessemer pig iron made up 441,472 tons and foundry iron 96,246 tons. Lorraine produced 227,911 metric tons.

Production of steel during January was 541,022 metric tons, 15,513 tons more than in December. Ingots figure for 528,716 tons and steel castings for 12,306 tons. Lorraine's contribution was 187,810 tons.

	Pig iron (Metric tons)	Steel (Metric tons)
Monthly average 1913	433,900	390,580
Monthly average 1922	427,380	372,600
Monthly average 1923	441,630	414,740
1924		
January	585,978	541,022

January output of pig iron in Luxemburg was 162,217 metric tons, as against 153,216 tons in December, 1923. Basic bessemer pig iron made up nearly the whole of this tonnage and reached 161,857 tons. The production of steel in January was 146,578 metric tons compared with 134,703 the preceding month.

Steel Corporation Has Big Year

Annual Report Shows Average Operations at 88 Per Cent of Capacity in 1923—First Six Months Reach 92 Per Cent—Net Earnings Gain 72 Per Cent—Will Spend $90,000,000 in 1924

IN POINT of operations, of production and of earnings, 1923 was the most remarkable peacetime year in the history of the United States Steel Corp. This fact is made clear by the twenty - second annual report of the corporation just made public. It shows, among other things, that the aggregate tonnage of materials produced for sale during the period has been exceeded in only two previous years. These were 1916 and 1917, when activities were being abnormally spurred by the tremendous war demand. Another outstanding feature of the report was the announcement that an outlay of $90,000,000 had been authorized for additions to plant, new construction and improvements in 1924. Most of the expenditures will be for the improvement and revamping of existing plants rather than of adding new capacity except the Gary tube works.

The good flow of business in 1923 and the absence of transportation difficulties or other restrictions upon operations, enabled the corporation to maintain an average rate of production of 88.3 per cent of capacity. During the first six months the rate reached an average of 92.6 per cent. In 1922 the operations averaged 71.3 per cent and in 1921 they dipped to 47.5 per cent.

Statistics of Steel Corporation Since Founding

Year	Gross receipts	*Net earnings	Balance capital expenditures	Production finished steel ingots gross tons	Shipments finished for sale net tons	Shipments finished products net tons	Number of employees
1923	$1,571,414,482	$187,953,667	$61,878,108	20,329,950	14,721,469	14,373,822	260,786
1922	1,092,697,772	109,788,916	23,551,991	16.082,385	11,785,331	11,911,904	214,931
1921	986,749,719	100,791,279	70,091,866	10,966,347	7,860,334	7,958,833	191,700
1920	1,755,477,025	185,095,359	102,956,133	19,277,960	14,228,502	14,098,707	267,345
1919	1,448,557,834	152,290,639	87,091,514	17,200,373	11,997,935	12,243,183	252,106
1918	1,744,312,168	208,281,104	129,855,037	19,583,493	13,849,493	14,124,986	268,710
1917	1,683,962,552	304,161,471	117,977,117	20.285,061	14,942,911	15,370,105	268,058
1916	1,231,473,779	333,574,177	64,680,648	20,910,589	15,460,792	15,542,088	252,668
1915	726,683,589	130,396,011	15,537,431	16,376,492	11,762,639	10,982,748	191,126
1914	558,414,933	71,663,615	28,171,013	11,826,476	9,014,512	9,078,559	179,353
1913	796,894,299	137,121,844	41,999,098	16,656,361	12,374,838	12,168,758	228,906
1912	745,505,515	108,174,673	13,780,361	16,091,223	12,506,619	12,696,935	221,025
1911	615,148,839	104,305,466	49,430,851	12,753,370	9,476,248	9,460,169	196,888
1910	703,961,424	101,054,754	53,101,221	14,179,369	10,733,995	10,727,751	218,435
1909	646,382,251	131,491,414	37,916,250	13,355,189	9,859,660	9,691,290	195,500
1908	482,367,840	91,847,710	49,422,697	7,838,713	6,206,832	7,102,456	165,211
1907	757,014,767	160,964,078	66,981,252	13,099,548	10,376,742	10,451,488	210,180
1906	696,756,926	156,624,273	32,155,146	13,511,149	10,578,433	10,862,425	202,457
1905	535,331,736	110,787,653	24,395,408	11,995,239	9,226,386	.....	180,158
1904	444,405,430	73,176,522	17,957,946	8,406,378	6,792,780	.....	147,343
1903	536,572,871	100,171,152	31,042,135	9,167,960	7,635,690	.....	167,709
1902	560,510,479	133,303,763	16,586,531	9,743,918	8,197,232	.....	168,127
1901	.....	84,779,293	.....	8,854,820	.....	.....	.....

* After federal taxes.

During 1922, when the steel industry was gathering momentum in its recovery from the depression period, domestic shipments gained 53 per cent over the 1921 total. The record of shipments follows:

Domestic Shipments	1923 Tons	1922 Tons
Rolled Steel and Other Finished Products	13,196,298	10,708,022
Pig Iron, Ingots, Ferro and Scrap	308,475	273,963
Iron Ore, Coal and Coke	401,875	740,380
Sundry Materials and By-Products	108,965	109,082
Total tons all kinds of materials, except Cement	14,019,613	11,831,447
Universal Portland Cement (Bbls.)	14,329,295	13,548,544
Export Shipments		
Rolled Steel and Other Finished Products	1,177,524	1,203,882
Pig Iron, Ferro and Scrap	2,691	3,377
Sundry Materials and By-Products	106,049	90,894
Total tons all kinds of materials	1,286,264	1,298,153
Aggregate tonnage of Rolled Steel and Other Finished Products shipped to both Domestic and Export Trade	14,373,822	11,911,904
Total Value of Business (Covering all of above shipments, including cement, completed cars and steamships delivered and other business not measured by the ton unit)	1923	1922
Domestic (not including inter-company sales)	$905,744,282	$646,592,293
Export	87,171,880	75,311,489
Total	$992,916,162	$721,903,782

The statement discloses that export shipments failed to show a gain but virtually held their own with a decline of less than 1 per cent. In 1922 export tonnage increased over the preceding year by 7 per cent. Export sales diminished still further in importance last year with their ratio amounting only to 8.9 per cent of aggregate shipments. In 1922 the ratio was 9.8 per cent and in 1921 it was 15 per cent. Sales of the corporation 1923, excluding intercompany business were $992,916,162 and show an increase of $271,012,380 or 37.5 per cent over 1922. The report states that prices received in 1923 for the 13,196,298 tons of rolled and finished steel products shipped to domestic trade netted an average of $8.87 per ton more than the average price received per ton in 1922 for similar products shipped. The price was $22.39 per ton higher than the low level of 1921. The export shipments were made at a price $10.03 per ton more than the average price obtained in the preceding year.

Total Shipments Large

Shipments of all products by the corporation in 1923, except cement, increased by a good margin over those for the preceding year. The total was 14,373,822 net tons compared with 11,911,904 net tons in 1922, a gain of 20 per cent. In 1921 these shipments amounted to 7,958,833 tons. Domestic shipments were 14,019,613 net tons compared with 11,831,447 net tons in 1922, an increase of 18 per cent. Dur-

Net Earnings Increase

Net earnings of the corporation in 1923 were the largest since its organization save for the three war years of 1916, 1917 and 1918. The total of $187,953,667, after federal income taxes, exceeded the total for any year since 1918. They were 72 per cent greater than the earnings of $109,788,916 in 1922, and they were slightly higher than the previous best postwar year of 1920 when $185,095,359 was earned.

The balance available for dividends from the year's earnings was $108,707,064. This amount was nearly three times the corresponding balance in the preceding year. Dividend disbursements were larger than in 1922 by $3,812,268. This was due to the extra dividend declared on com-

COMPARATIVE INCOME ACCOUNT

For the Fiscal Years ending December 31, 1923 and 1922

	1923	1922	+Increase —Decrease
EARNINGS—Before charging interest on Bonds and Mortgages of Subsidiary Companies:			
First Quarter	$36 874 674 77	$21 303 631 59	+ $15 571 043 18
Second Quarter	49 940 029 97	29 330 255 01	+ 20 609 774 96
Third Quarter	49 112 517 68	29 596 455 29	+ 19 516 062 39
Fourth Quarter	52 026 445 43	29 558 574 43	+ 22 467 871 00
Total for year	*$187 953 667 85	*$109 788 916 32	+ $78 164 751 53
Less, Interest on outstanding Bonds and Mortgages of the Subsidiary Companies	8 306 993 48	8 259 605 93	+ 47 387 55
Balance of Earnings	$179 646 674 37	$101 529 310 39	+ $78 117 363 98
Less, Charges and Allowances for Depletion and Depreciation applied as follows, viz.:			
To Depreciation and Replacement Reserves and Sinking Funds on Bonds of Subsidiary Companies	41 745 434 23	33 382 624 09	+ 8 362 810 14
To Sinking Funds on U. S. Steel Corporation Bonds	9 724 720 38	9 305 884 70	+ 418 835 68
Net Income in the year	$128 176 519 76	$58 840 801 60	+ $69 335 718 16
Deduct:			
Interest on U. S. Steel Corporation Bonds outstanding	18 764 567 62	19 232 304 87	— 467 737 25
Premium on Bonds redeemed and acquired for Sinking Fund, viz.:			
On Subsidiary Companies' Bonds	165 611 86	150 205 98	+ 15 405 88
On U. S. Steel Corporation Bonds	774 464 84	724 873 04	+ 49 591 80
Balance	$108 471 875 44	$38 733 417 71	+ $69 738 457 73
Add: Net Balance of sundry receipts and charges, including adjustments of various accounts	235 188 82	920 037 52	— 684 848 70
	$108 707 064 26	$39 653 455 23	+ $69 053 609 03
Dividends on U. S. Steel Corporation Stocks, viz.:			
Preferred, 7%	25 219 677 00	25 219 677 00	
Common { 1923, Regular 5%, Extra ¾% / 1922, Regular 5% }	29 227 393 75	25 415 125 00	+ 3 812 268 75
Surplus Net Income	$54 259 993 51	†$10 981 346 77	+ $65 241 340 28
Less, Sums appropriated and expended or to be expended account of additions, improvements or betterments to plants and property	40 000 000 00		+ 40 000 000 00
Balance carried forward to Undivided Surplus	$14 259 993 51	†$10 981 346 77	+ $25 241 340 28

*Balance of Earnings after making allowances for estimated amount of Federal income taxes.
†Deficit provided from Undivided Surplus.

mon stocks of three-fourths of 1 per cent.

The surplus net income for the year was $54,259,993 against a deficit of $10,981,346 in 1922. The sum of $40,000,000 was appropriated for improvements of property and the balance carried forward to undivided surplus, was $14,259,993. The grand total of undivided surplus now possessed by the corporation is $512,751,219.

Chairman Gary calls attention to the epoch-making development in the steel industry last year—the beginning of the total elimination of the 12-hour shift. By Dec. 1, 1923, the process of elimination had been generally completed in all of the corporation's subsidiaries except one. In the remaining subsidiary the change was not completed until February, 1924, due to a shortage of skilled labor.

"The number of additional employes required by those companies in which the plan had become effective, and on the basis of operating conditions then prevailing, was 17,117, an increase of over 10 per cent," says Chairman Gary. "Of the increase in the total payroll resulting from the change, approximately 60 per cent arises from the employment of additional men and 40 per cent from increased allowances to employes whose hours of service were not changed, being those who already were working 10 hours a day or less."

In 1921 and 1922 shipments of finished products of the corporation were slightly in excess of outputs. This condition was reversed last year. The production of finished products was 14,721,469 tons compared with shipments of 14,373,822, an excess of production over shipments of 348,000 tons. In 1922 shipments exceeded production by 126,000 tons. This change was due to the favorable operating conditions permitting uninterrupted outputs, while at the same time demand slackened off in the middle of the year. Referring to the year's record of demand Chairman Gary says:

"The improvement in buying of iron and steel products which developed in the early fall of 1922, after nearly two years of depression in the industry, continued very satisfactory until June, 1923, following which there was for several months a decided diminution of new business offered. In the closing months of the year, however, there was noticeable improvement in tonnage entered and this has continued to the date of writing this report."

The increased operations during the year, together with higher rates for labor and prices for materials used, entailed a very much greater outlay for expenses of general maintenance and upkeep of properties, the report

PRODUCTION

OF

RAW, SEMI-FINISHED AND FINISHED PRODUCTS BY SUBSIDIARY COMPANIES IN THE YEARS 1923 AND 1922

PRODUCTS	1923	1922	1923 Increase	
ORES MINED				
In the Lake Superior Region (*Iron Ore*)	*Tons*	*Tons*	*Tons*	%
Missabe and Vermilion Ranges	24 658 317	16 549 588	8 108 729	49.0
Gogebic, Menominee and Marquette Ranges	3 005 181	2 477 672	527 509	21.3
In the Southern Region—*Alabama* (*Iron Ore*)	3 239 370	2 545 242	694 128	27.3
In Brazil, S. A. (*Manganese Ore*)	112 241	205 677	93 436*	45.4*
Total	31 015 109	21 778 179	9 236 930	42.4
LIMESTONE QUARRIED	6 571 486	5 633 186	938 300	16.7
COAL MINED				
For use in the manufacture of coke	28 234 030	16 778 413	11 435 617	68.3
For steam, gas and all other purposes	7 055 871	6 515 058	540 813	8.3
Total	35 289 901	23 293 471	11 996 430	51.5
COKE MANUFACTURED				
In Bee-Hive Ovens	7 142 901	3 431 846	3 711 055	108.1
In By-Product Ovens	11 694 730	9 805 212	1 889 518	19.3
Total	18 837 631	13 237 058	5 600 573	42.3
BLAST FURNACE PRODUCTION				
Pig Iron	16 527 830	11 885 179	4 642 651	39.1
Spiegel, Ferromanganese and Ferrosilicon	201 396	141 984	59 412	41.8
Total	16 729 226	12 027 163	4 702 063	39.1
STEEL INGOT PRODUCTION				
Bessemer Ingots	5 451 390	4 068 578	1 382 812	34.0
Open Hearth Ingots	14 878 560	12 013 807	2 864 753	23.8
Total	20 329 950	16 082 385	4 247 565	26.4
ROLLED AND OTHER FINISHED STEEL PRODUCTS FOR SALE				
Steel Rails (Heavy and Light Tee and Girder)	1 649 906	1 225 999	423 907	34.6
Blooms, Billets, Slabs, Sheet and Tinplate Bars	715 244	673 099	42 145	6.3
Plates	1 783 846	1 410 414	373 432	26.5
Heavy Structural Shapes	1 204 395	936 733	267 662	28.6
Merchant Bars, Hoops, Skelp, Light Shapes, Etc.	3 007 662	2 456 915	550 747	22.4
Tubing and Pipe	1 563 982	1 178 611	385 371	32.7
Wire Rods	213 518	158 495	55 023	34.7
Wire and Wire Products	1 636 580	1 404 663	231 917	16.5
Sheets (Black and Galvanized) and Tinplates	1 774 467	1 504 121	270 346	18.0
Finished Structural Work	458 595	301 248	157 347	52.2
Angle Splice Bars and All Other Rail Joints	288 118	218 538	69 580	31.8
Spikes, Bolts, Nuts and Rivets	84 456	72 531	11 925	16.4
Axles	154 876	96 403	58 473	60.7
Steel Car Wheels	104 271	78 247	26 024	33.3
Sundry Steel and Iron Products	81 553	69 314	12 239	17.7
Total	14 721 469	11 785 331	2 936 138	24.9
MISCELLANEOUS PRODUCTS				
Zinc	64 205	59 818	4 387	7.3
Sulphate of Iron	36 079	32 389	3 690	11.4
Fertilizer—"Duplex Basic Phosphate"	15 748	16 513	765*	4.6*
Fertilizer—Sulphate of Ammonia	150 000	123 118	26 882	21.8
Ammonia (as Liquor)	2 528	3 816	1 288*	33.8*
Benzol Products	143 312	119 373	23 939	20.1
	Bbls.	*Bbls.*	*Bbls.*	
Universal Portland Cement	14 440 000	13 168 000	1 272 000	9.7

sets forth. The expenditures for these purposes and the further provisional allowances for depletion of minerals and accruing depreciation and obsolescence of improvements amounted to $182,475,000 in 1923. This compared with $131,145,042 in 1922.

Improvement of business and the resulting need for expanded capacity are reflected in the outlay of $60,762,000 for additional property, extension and increased facilities. This was almost exactly double the amount spent for similar purposes in 1922. Of the total amount $35,416,609 was for manufacturing properties; $8,079,269 was for coal properties; and $5,313,516 was for ore properties.

The corporation increased its expenditures for vessels, with a total of $1,458,338 for Great Lakes and ocean-going bottoms compared with $1,051,611 in 1922. The high of capital expenditures was reached in 1918 with an aggregate of $129,855,037. Commenting upon the capital expenditures Chairman Gary says:

"At the close of 1923 the unexpended balances on appropriations then authorized for additions, construction and improvements totaled $77,000,000. These authorizations aside from the new tube plant being constructed at Gary which is exclusively added capacity, cover very largely work of reconstruction with modern type of old and obsolete mills, the building of by-product coke plants to substitute beehive ovens, the development of new operations for the production of coal from the corporation's reserves and the installation of improved and more economically operated equipment. The unexpended balances for authorized work at the close of 1923, together with important authorizations made since Jan. 1, 1924, will call for an outlay on capital account during 1924 of an estimated sum of $90,000,000."

The several subsidiary companies of the corporation purchased or constructed for their own uses during the year 42 standard gage locomotives, 1592 freight cars and 20 road and work cars at a total cost for all of $7,157,346. This compares with six locomotives and 397 cars in 1922.

The consolidated general balance sheet shows a strikingly strong financial position. Current assets as of Dec. 31 are reported at $588,595,472 compared with $512,202,554 one year before. Current liabilities are $137,403,026 against $98,753,583 at the close of 1922. Net working capital amounted to $451,192,000 against $413,449,000 in 1922. In cash and marketable securities the corporation has $207,500,000 compared with $186,300,000 one year ago. Inventories of $270,757,955 show an increase of $50,050,955 over Dec. 31, 1922.

The rising tide of prosperity for the corporation last year is shown by the increase in the ratio of net manufacturing income to gross receipts. In 1923 this ratio was 13 per cent compared with only 8.9 per cent in 1922 and 8.3 per cent in 1921. The average ratio of the three war years was 16.4 per cent. The influence of high taxes, of high wages and heavy costs, generally, is reflected in the fall of the ratio below the prewar level, in the face of last year's tremendous business.

The production of ingots in 1923 was 26 per cent greater than it was in 1922. The total was 20,329,950 tons. This record was exceeded in only one previous year in the corporation's history. That was in 1916 when ingot production reached a total of 20,910,589 tons. Gross receipts for 1923 of $1,571,414,482 gained 44 per cent over those for 1922. Net earnings increased 72 per cent.

Some increase in productivity in 1923, either through greater labor efficiency or through labor-saving equipment, is revealed in the report. Although the production of finished material gained nearly 25 per cent over 1922, total employment increased only 21.3 per cent. It is significant that production was about 2 per cent greater than it was in 1920, although employment was smaller by about 3 per cent.

The average number of employes during the entire year was 260,786 compared with 214,931 in 1922 and 191,700 in 1921. The year's payroll of $469,502,634 grew by 45 per cent which was due in part to higher wages and greater wage costs flowing from the elimination of the 12-hour turn. The average salary or wage per employe per day was $5.83 against $4.91 in 1922 and $5.73 in 1921. The average number of employes in all companies during the year and the total salaries and wages paid compared with the preceding year follow:

Employes of	1923 Number	1922 Number
Manufacturing properties	180,727	150,847
Coal and coke properties	33,354	26,856
Iron ore properties	15,311	11,906
Transportation properties	27,135	21,523
Miscellaneous properties	4,259	3,799
Total	260,786	214,931
Total salaries and wages paid	$469,502,634	$322,678,130
Average earnings per employe per day for year:		
All employes, exclusive of general administrative and selling force	$5.73	$4.78
Total employes, including general administrative and selling force	$5.83	$4.91

"In January, 1924, the employes of the corporation and the subsidiary companies were offered the privilege of subscribing for 100,000 shares of common stock of the United States Steel Corp. at the price of $100 per share, under substantially the same conditions as those under which offerings have been made in previous years," says Chairman Gary. "The offer was largely oversubscribed, applications having been received from 61,292 employes for a total of 154,363 shares. Allotments were made as follows: Each subscription for two shares or less was allotted the same, and all others were allotted 50 per cent of their subscriptions. The total number of shares allotted on this basis was 113,588. At Dec. 31, 1923, there were 50,020 employes who were registered stockholders, holding an aggregate of 151,530 shares of preferred stock and 689,703 shares of common stock; also there were 7066 additional employes who had in force open subscription accounts covering purchase of stock, but were not registered holders of shares. Appropriation was made from the earnings for 1923 of a fund for distribution under and in accordance with the profit-sharing plan adopted by the stockholders in 1921.

"Pensions. Pensions were paid during the year by the trustees of the United States Steel and Carnegie pension fund to retired employes to the amount of $1,448,113, compared with $1,266,661 disbursed in the preceding year. Pensions were granted during the year to 576 retiring employes. At the close of the year there were 4054 names on the pension rolls, a net increase of 168 during the year. Since the inauguration of the plan in 1911, an aggregate of $9,543,235 has been paid in pensions.

"Accident Prevention. The total amount expended by the corporation and the subsidiary companies during 1923 for accident prevention and safety work was $1,763,417, compared with an outlay of $1,175,171 in the preceding year. Compared with the year 1906, when accident prevention work was systematically inaugurated, the total number of disabling accidents in 1923, per 100 employes, was 55.4 per cent less than in the first named year.

"Accident Relief. The disbursements made by the subsidiary companies during the year for work accidents (including accruals not yet actually payable under state compensation laws) was $4,843,172, compared with an outlay of $4,170,945 in 1922. Of the total disbursed in 1923, 90 per cent was paid or is payable directly to the injured employes or their families.

"Sanitation. The expenditures made during 1923, in providing modern sanitary facilities throughout the plants, mines and departments, for the health and comfort of the employes, totaled $3,019,363, compared with an outlay of $2,252,975 in the previous year.

"Housing and welfare. At the close of 1923 the subsidiary companies had advanced or loaned employes the net sum of $7,975,091 on contracts or mortgages, carrying interest at 5 per cent and payable in instalments over a period of years, to assist them in acquiring homes under the corporation's home-owning plan."

IRON TRADE REVIEW
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Corporation Has Best Peace Year

AMPLE substantive evidence that 1923 was one of the best years in the history of the steel industry is contained in the twenty-second annual report of the United States Steel Corp. covering that period. All things considered, no peacetime year has made so good a record in the affairs of the leading producer. Only in the war years of 1916 and 1917 when productive capacities were being strained to the utmost to supply military demands, can figures of output be shown exceeding those that marked the strictly commercial requirements in 1923. Even in these cases the margin of difference was not large.

A fact that looms large in this comparison is that while total shipments of rolled and finished steel products were greater in both 1916 and 1917, those applying to domestic deliveries, exclusively in 1923 were at the highest point in the history of the Steel corporation duplicating in a remarkable way those in 1917, the record year. For a peacetime year, 1923 was the largest by a substantial tonnage. In 1923 the Steel corporation shipped to domestic consumers a total of 13,196,298 tons of rolled steel and other finished products which compares with 12,453,243 tons in 1920, the previous record peace year, with 13,196,910 tons in 1917 and with 13,075,295 tons in 1916.

Shipments in 1923 of rolled steel and other finished products covering both domestic and export destinations, while the greatest for any peace period totaling 14,373,822 tons, were below the comparative figures of 1916 with 15,542,088 tons and of 1917 with 15,370,175 tons respectively. In 1920 they were 14,098,707 tons. These figures tend to illustrate both how good the domestic demand was last year and how restricted was the volume of foreign business done by the leading producer. In fact, the export shipments last year of rolled steel and other finished products by the Steel corporation aggregating only 1,177,524 tons were the smallest since 1914 excepting only the depression year of 1921. For previous years outbound tonnages were 1,123,882 in 1922; 1,126,795 in 1921; 1,654,564 in 1920; 1,932,544 in 1919; 1,740,817 in 1918; 2,173,195 in 1917; 2,465,793 in 1916 and 2,350,524 in 1915.

In production, 1923 for the Steel corporation ranked even higher than in shipments of finished material. Only one previous year, 1916, exhibits a greater total of either pig iron or steel ingot production and in only two years, 1916 and 1917, was a larger tonnage of rolled and other finished steel products made for sale.

Duplicating Labor Statistics

REFERRING to the work of the United States employment service, which is part of his department, the secretary of labor says:

"Inability to extend this important work of collecting payroll data and information regarding employment and unemployment is to be regretted."

Respecting the work now being done, we are told by the secretary, in his last annual report:

"Nine district directors, located at important centers throughout the United States, with the help of special agents in each district and the forces of the bureau of labor statistics collect and forward regularly to Washington this information which is published monthly in the Industrial Employment Information Bulletin. The editorial on the first page of the bulletin is based on these reports which furnish payroll data from 1428 firms, each employing 500 or more workers."

As we read along in the secretary's report we learn that the bureau of labor statistics is the oldest of the bureaus in the department of labor, and the organic act of the department provides that this bureau collect complete statistics of the conditions of labor. Reports are collected by this bureau from 50 industries, and the number of establishments from which they are received monthly has reached 6441. The number of employes of which there was record in an average month was 2,251,565.

The United States government's work of collecting statistics with respect to employment and labor conditions thus has been duplicated for some time by two bureaus within the department of labor. The bureau of labor statistics is the oldest and has been the best equipped of the two for the collection of the data. The employment service was created later to meet emergencies of unemployment. Instead of these two bureaus co-operating, the employment service began to rival the other.

A more glaring example of inefficient organization,

and waste through duplication, would be difficult to find in Washington. It is costing taxpayers more than $200,000 annually to maintain the employment service. A large part of the money is expended for the collection of employment statistics, which the department "next door" does more thoroughly and efficiently. It is not at all to be "regretted" that this duplication cannot be extended. It is to be regretted, however, that there is such lack of team-work in an important administration department.

Market Psychology Is Healthy

FUTURE covering of tonnages of pig iron and finished steel is lacking in the present market to a degree that is abnormal. While the situation is not fully what is known as a spot market it approaches that state and indicates a psychological condition resulting from an equilibrium of supply and demand and their correlating factors.

Industry drawing its supplies from blast furnaces and steel mills is operating at a high rate and its requirements are large. Production also is at a high rate, and for the whole iron and steel industry is around 90 per cent of capacity. Railroads are carrying material without delay and quick deliveries result.

An unusual balance is present in the situation which makes for efficiency and smoothness of operations. No strike, labor shortage, railroad congestion or delayed delivery upset the orderly procedure. The consumer buys steel for a short period ahead, certain of receiving it, and specifies the tonnage with the purchase. The mill thus has a bona fide order and can count on its booked tonnage being taken out. It can arrange rolling schedules to produce in the most economical way and avoid lost time and motion.

The contract for steel at present almost has ceased to be the simple option or reservation of tonnage that so often it has been in the past and but a small percentage of mill backlogs now consists of unspecified tonnage.

Many economies result from this state of affairs. Consumers carry small inventories and keep their assets liquid. Mills have liquid order books which effect economies in operation. Railroads find plenty of business which is offered steadily and without peaks.

As long as this balance can be maintained there will be no manifestation of nervousness or desire to book far ahead and to obtain options on future unspecified tonnage which is always a menace to stability. In the yearly months of 1923 buying was done in much the same way as today until suddenly consumers found they could not obtain the nearby delivery they had been enjoying. Quickly the market changed and inquiry piled in at a rate that threatened to repeat 1920. This has not been repeated and signs indicate it will not be repeated this year.

Producers seem to have the situation well in hand and output is increasing sufficiently to match the needs of consumers. Attention has been called to the fact that unfilled orders of the Steel corporation today are only 18 per cent higher than at the low point of the depression of 1921. In June, 1921, its mill activity had fallen to 30 per cent of capacity, the lowest point in history. Present operations are at 96 per cent of capacity while bookings represent assured activity over only a fortnight greater period than in 1921. Putting it another way, the Steel corporation with only 18 per cent more bookings is producing at more than three times the rate of June, 1921. The difference is entirely in the psychology of the market and not in the actual figures.

Studying Problems of "Average" Plant

IN SOLVING administration problems the managers of manufacturing plants of medium or small size are at a distinct disadvantage in comparison with the corresponding executives of larger companies. The operating heads of concerns of modest proportions are left largely to their own resources in determining the policies to be pursued when danger threatens. On the other hand the presidents of the large companies are amply fortified by the ability and experience of highly trained experts in their employ.

For this reason it always has appeared that more attention should be given to the problems of the manager of the smaller establishment. A casual survey of the papers on engineering and management problems presented before a number of the national technical associations shows that perhaps an undue amount of attention is given to the problems of the larger firms. In a few cases where a movement has been designed to aid firms in various branches of industry it has failed simply because the message in question was directed to the big company rather than to the one of medium size. The general adoption of cost accounting systems has been greatly retarded because the advocates of cost accounting have not taken into account the relative importance of supplying a simple and easily applied system adapted to the average shop. In most cases those who discuss employment problems, the training of foremen, the elimination of waste, and the efficiency of labor do so from the standpoint of operators of extensive factories. These discussions appear so formidable to the manager of the small plant that his interest is dampened before he arrives at a clear understanding of the subject.

The neglect of the small operator is all the more deplorable because of the important place he holds in the general industrial picture. In number he is one of the majority in industry and it is safe to say that an improvement of 2 or 3 per cent in the efficiency in each of the "average" metalworking plants in the country would far outweigh in its general effect upon the country as a whole the attainment of a much higher gain in efficiency in each of the so-called large plants.

Current Statistics of Industry

Beehive Coke Production Continues to Recede

Washington, March 24.—The production of beehive coke declined in the week ended March 15. It is now estimated that the total output was 307,000 net tons, a decrease of 19,000 tons, or nearly 6 per cent, says the geological survey. Decreases in Pennsylvania, Ohio, and West Virginia, which were only partially offset by the improvement in the group of four southern states, were responsible for the decrease. The present average daily rate of output is 25 per cent less than it was a year ago. The comparison follows:

	Mar. 15, 1924(a)	Mar. 8, 1924(b)	Mar. 17, 1923
Pennsylvania and Ohio	246,000	269,000	330,000
West Virginia	15,000	18,000	25,000
Alabama, Kentucky, Tennessee and Georgia	27,000	20,000	24,000
Virginia	10,000	10,000	18,000
Colorado and New Mexico	5,000	5,000	8,000
Washington and Utah	4,000	4,000	5,000
United States total	307,000	326,000	410,000
Daily average	51,000	54,000	68,000

(a) Subject to revision. ((b) Revised from last report.

The decline in soft coal production continues with the further weakening of prices. The current production is the lowest at this season of the year for which there is any record except in 1919 and 1921.

Issue Statistical Book

London, March 17.—The National Federation of Iron & Steel Manufacturers, London, has issued its annual bulletin of statistics covering 1922 and previous years. This bulletin, which consists of 91 pages, gives very complete statistics of the iron and steel production, exports and imports of the principal countries of the world. It is issued under the direction of M. S. Birkett, statistical officer of the federation.

Rolled Zinc Makes Gain

Production of rolled zinc in the United States made a gain of 4 per cent in 1923 over 1922, when the output was the largest since 1918, the year of greatest production, according to a statement made public by the department of the interior through the geological survey.

At the beginning of the year the base quotation on sheet zinc was 9.25 to 9.50 cents a pound, with discounts or extras for gages and special sizes and shapes. The price rose to 10 cents in March and April and gradually declined to 9.25 cents by August.

The importation of zinc sheets entered for consumption in the United States, which amounted to nearly 7000 tons in 1921, was much less in 1922, and practically stopped in 1923.

Tonnage of rolled zinc in 1922 and 1923 was as follows:

	1922 Pounds	1923 Pounds
Sheet zinc not over 1/10-inch thick	50,203,438	49,179,501
Boiler plate and sheets over 1/10-inch thick.	2,229,877	2,294,230
Strip and ribbon zinc..	54,585,375	60,192,743
Total rolled zinc	107,018,690	111,666,474
Sheet zinc imported	831,141	584
Rolled zinc exported	6,433,089	7,463,362
Available for consumption	101,416,742	104,203,696

The Superior Steel Corp., Pittsburgh, for the year ended Dec. 31, 1923, shows net profit of $734,879 after depreciation, federal taxes, etc. This compares with $515,862,028 in 1922.

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Fire Clay and Silica Brick Output Increased

Production and shipments of fire clay and silica brick in February increased over January, the Refractories Manufacturers' association reports. Production of fire clay brick increased from 71 to 75 per cent; shipments from 68 to 73 per cent. Production of silica brick increased from 49 per cent in January to 63 per cent in February; shipments from 56 to 67 per cent.

Net new business in fire clay brick advanced 2 per cent, going to 86 per cent of capacity of those plants reporting. The net new business in silica brick fell from 90 per cent in January to 82 per cent in February. The stocks of fire clay brick on hand the last day of February amounted to 255 per cent of the capacity of the plants reporting; and of silica brick, 151 per cent. The unfilled orders on hand the last day of the month amounted to 101 per cent of capacity reporting in fire clay, and 121 per cent in silica. This apparent discrepancy between the stocks on hand and the unfilled orders is explained by the fact that the stocks on hand include large quantities of shapes made up in advance of the receipt of actual orders from regular customers and are in no sense "free stock." The actual "free stock" of fire clay in 9-inch equivalents on Feb. 29 amounted to 54,514,520 brick; in silica 7,305,221 brick in 9-inch equivalents were on hand as "free stock" to apply on new orders. A comparative table follows:

FIRE CLAY

	Feb. 29, 1924	Jan. 31, 1924
Capacity reporting	54,657,300	54,387,300
On hand last day preceding month	138,883,589	135,598,014
Production	41,358,879	38,966,272
Shipments	40,026,883	37,420,170
On hand last day current month	140,215,585	137,144,116
New orders received during month	47,778,422	46,118,987
Cancellations	787,080	421,848
Net new business	46,991,342	45,697,139
Unfilled orders last day current month	55,320,501	48,292,475

SILICA BRICK

	Feb. 29, 1924	Jan. 31, 1924
Capacity reporting	9,759,667	9,759,667
On hand last day preceding month	15,118,353	15,830,979
Production	6,203,189	4,789,559
Shipments	6,521,783	5,501,185
On hand last day current month	14,799,759	15,118,353
New orders received during month	8,046,696	9,375,729
Cancellations	10,458	507,239
Net new business	8,036,238	8,868,390
Unfilled orders last day current month	11,881,647	10,367,192

The Business Trend

March 27, 1924

BY JOHN W. HILL, FINANCIAL EDITOR

AT THE threshold of spring, business presents a highly variegated, mixed and irregular appearance. Uncertainties abound and caution reigns supreme in the councils of industry. Yet the outlook is neither gloomy nor depressing.

Fears of a speculative or inflation boom have been submerged by the wave of conservatism. High pitched activities in some lines may not be maintained. Yet enormous consumption and vast credit reserves form a strong buffer against severe deflation or liquidation.

There is no indication of an immediate decline in consumption. Employment continues large. In February there was a gain of 1.2 per cent in employment in 52 industries surveyed by the department of labor. Per capita wages are 8 per cent higher than the level of one year ago.

Moreover, agricultural conditions have improved. The total value of all crops and livestock in 1923 gained nearly $1,000,000,000 over 1922. The increase of 16 per cent in February mail order sales reflects better purchasing power on the farm.

Money Rates Low

One of the most important of recent developments has been the sharp decline in money rates. For the first time in recent years call loan rates in New York dipped as low as 2 per cent. Many causes have been advanced for this decline. There are two dominant reasons however.

One of these is the diminished demand for credit, growing out of the lack of commodity speculation, easier prices and general trade conservatism. The other is the rise in credit reserves, due to the uninterrupted inflow of gold into this country.

The slackening of credit demand is reflected in the last report of the federal reserve system. This shows the smallest rediscounts since midsummer, 1922. At the same time federal reserve note circulationdropped below $2,000,000,000 for the first time in six years.

Credit But One Factor

These credit reserves give assurance of easy money for business. Some think they may still result in inflation. Low money rates, however, comprise but one factor in stimulating prices and business activity. While trade caution persists a dangerous uplift of prices seems impossible.

Tax delay, and the prospects for a soldiers bonus in congress have not reassured financial sentiment. The franc continues strong and the Dawes report is expected in a few days.

Favorable earning conditions in the steel industry are reflected in 1923 reports of large steel companies. Earnings of the United States Steel Corp. increased 72 per cent over 1922. The proposed outlay of $90,000,000 on new construction in 1924 reveals the corporation confidence in the future of the steel industry.

The Barometer of Business

Weekly Comparison

	Last week	Week before	One mo. ago	One year ago	1913
Business failures..	392	425	384	371	...
Cash ratio Fed. Res. System %	80.8	80.3	81.4	75.7	...
Loan rate, 4-6 mo. N. Y. %.....	4½	4½-4¾	4¾-5	5¼	6
Aver. 25 industrial shares	$110.09	$111.41	$111.12	$116.03	$58.19
Aver. 25 railroad shares	$61.65	$61.25	$60.22	$65.06	$82.90
Aver. 40 bonds....	$78.50	$77.84	$77.80	$78.42	$93.00
Car loadings, week ended March 8.	929,505	945,019	935,109	905,244	*819,329
Bank debits, 246 cities (000 omitted)	$10,106,951	$9,033,343	$10,462,000	$10,208,225	.....

*1920

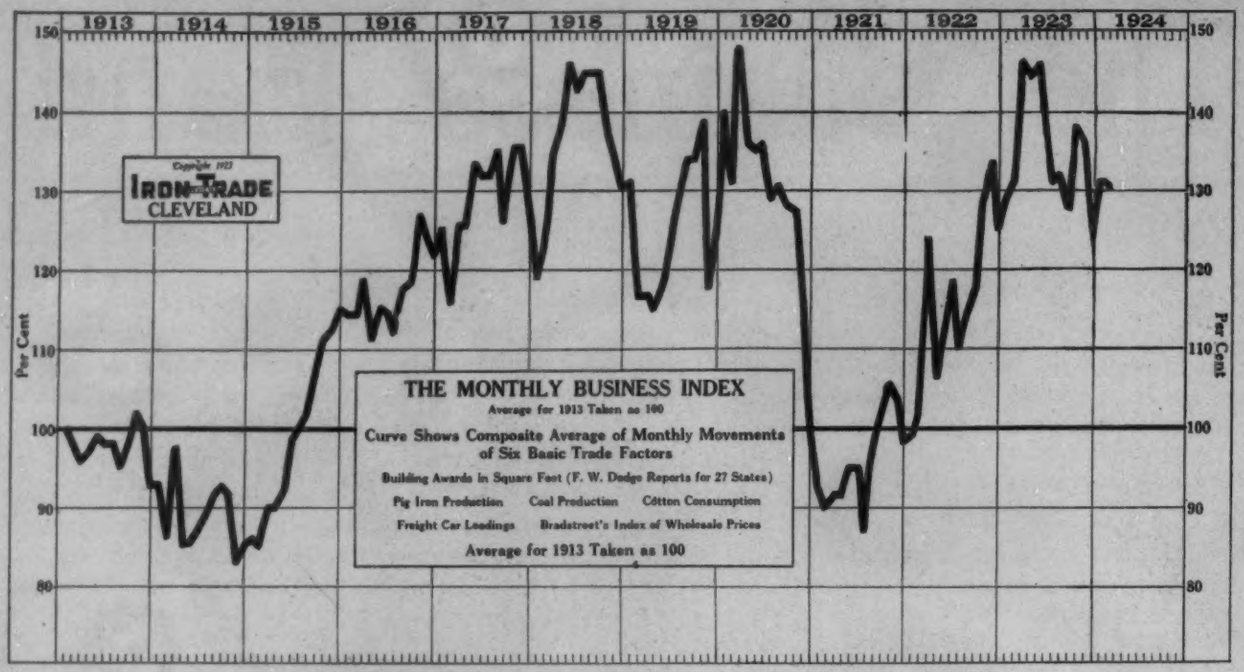
Foreign Exchange (Demand)

	Normal	Last week close	One week before	One month ago	One year ago
Sterling	$4.86	$4.28	$4.29	$4.29	$4.68
Francs	19.3c	5.35c	4.73c	4.18c	6.48c
Lira	19.3c	4.31c	4.26c	4.30c	4.80c

Monthly Comparison

	February	Month before	Year ago	Mo. average 1913
Dodge Building awards in 27 states (sq. ft.)	48,036,100	49,867,000	41,751,500	31,250,000
Business failures: Number	1780	2108	1508	1336
Liabilities ...	$35,942,037	$51,272,508	$40,627,939	$22,732,000
Exports	$367,000,000	$395,170,129	$306,957,000	$233,195,000
Excess of gold imports	$34,606,134	$44,993,832	$6,983,000	†$630,716
Bureau of labor price index...	152	151	157	100
Bradstreet's price index	139.4	142.7	149.6	100
Economist's British price index	171.8	171.5	162.0	100
Nat'l Industrial Con. board living cost index	163.9	164.6	157.5	‡100
New incorporations	$661,048,200	$878,704,700	$700,708,300	$172,131,000
Railroad net earnings	‖$51,281,000	$72,000,000	$61,128,970	$59,301,000

†Excess of gold exports. ‡July, 1914. ‖January.

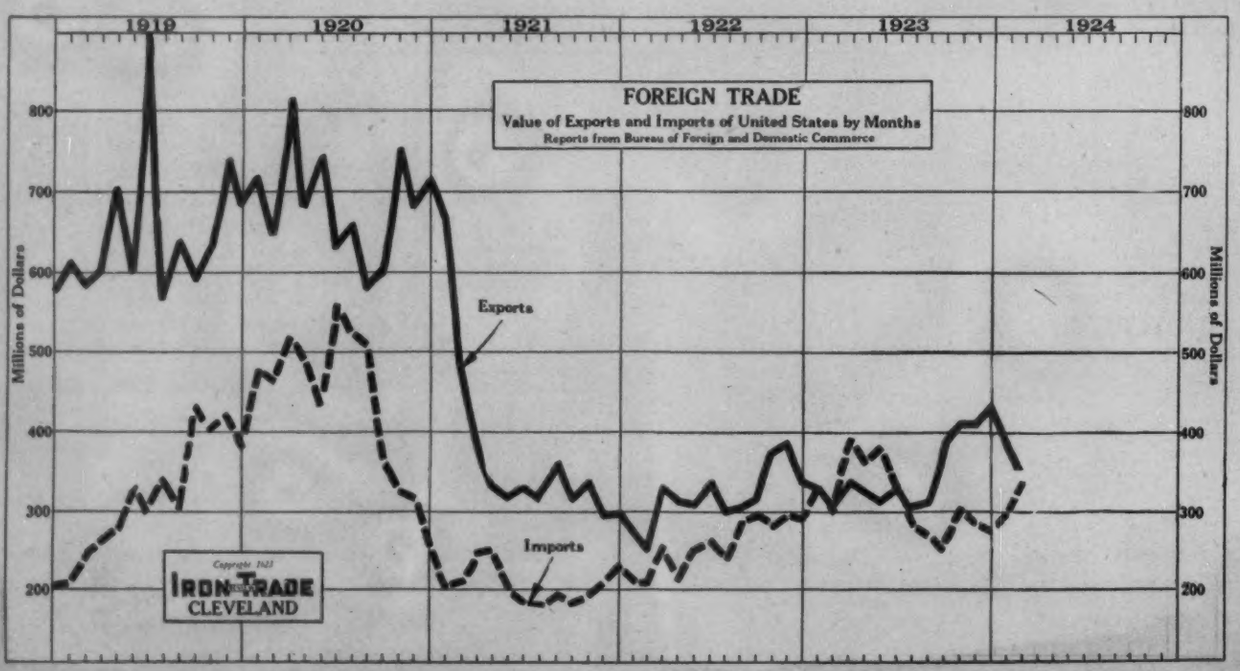


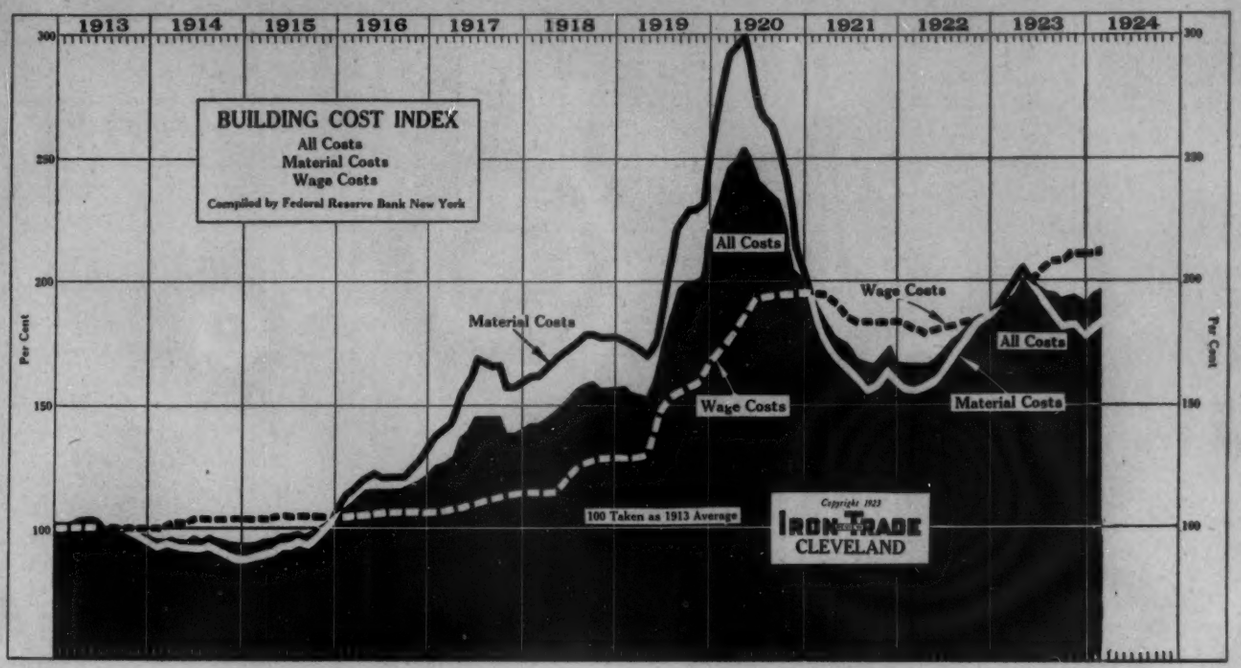
Business Index

A HINT of faintly slower industrial activity is contained in the slight drop in IRON TRADE REVIEW's Business Index in February. The index advanced sharply in January to nearly 33 per cent above the 1913 level. In February it dropped to 30.1 per cent over 1913. The reactionary movement contrasted with a gain in February last year. Pig iron production and freight traffic were the factors which advanced. Building, cotton consumption, coal output and prices declined. Coal production is the lowest point at this season since 1921.

Foreign Trade

FEBRUARY brought an upturn in the value of American imports, while exports declined. Exports of $367,000,000 compared with $395,000,000 in January and $306,957,000 in February 1923. Imports totaled $335,000,000 against $295,500,000 in January and $303,412,000 one year before. The excess of exports dropped sharply to $32,000,000. It far exceeded the export excess of $3,545,000 one year ago, however. Last spring a huge import balance appeared. Gold imports of $35,000,000 in February cancelled the goods export excess.



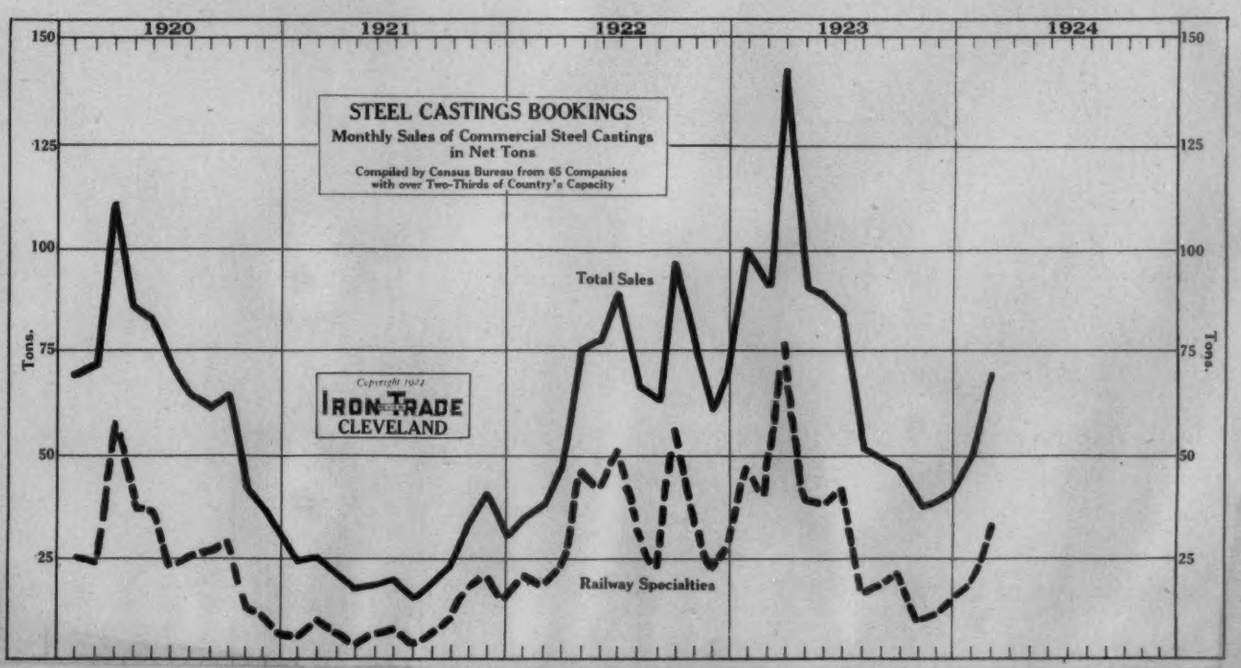


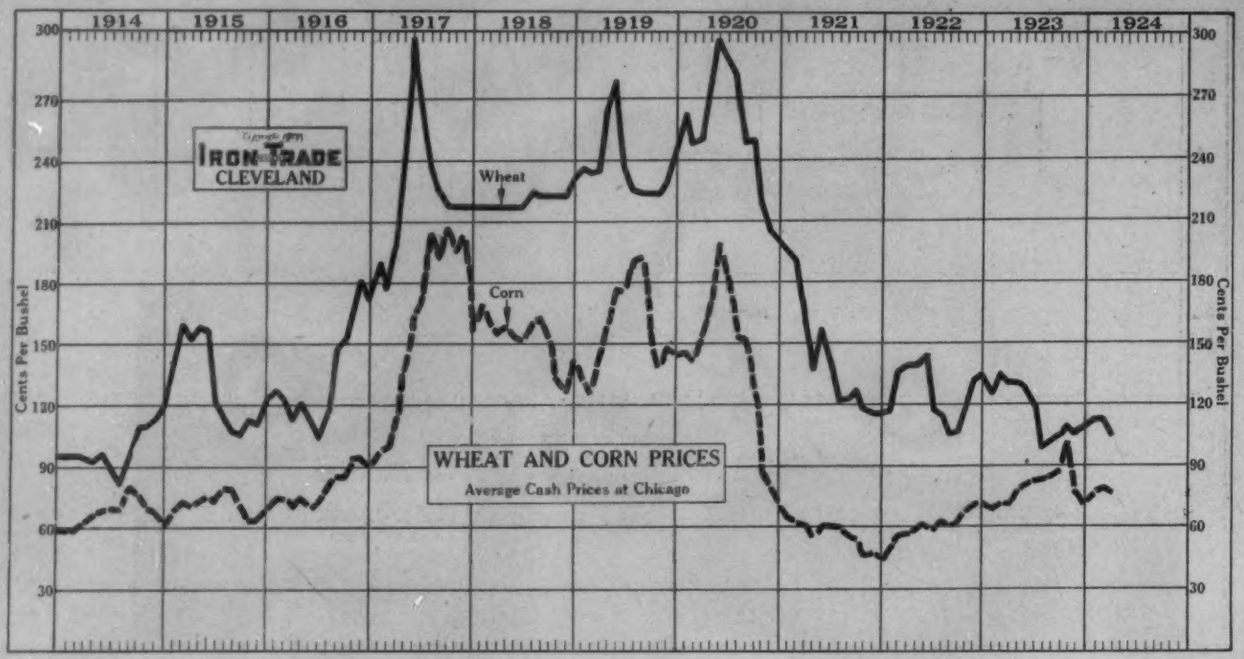
Building Costs

BUILDING costs continue to climb. In February the index compiled by the federal reserve bank of New York, advanced to 95 per cent above the 1913 level. This was a gain of two points in a month and of four points since December. The index is now four points higher than it was one year ago. Building wages at 112 per cent over 1913 are 22 points higher than 12 months ago. Building materials at 82 per cent over 1913 are higher than in December but lower than one year ago.

Steel Castings

BOOKINGS of steel castings in February made a wide gain. They were the highest of any month since June 1923. The impetus for the increase was derived from railroad purchases. Bookings of railroad specialties of 34,901 tons were 89 per cent larger than those for January. They were 12 per cent below February 1923. Miscellaneous tonnage of 35,928 tons was only 19 per cent greater than in January and 28 per cent under the record of 12 months ago.



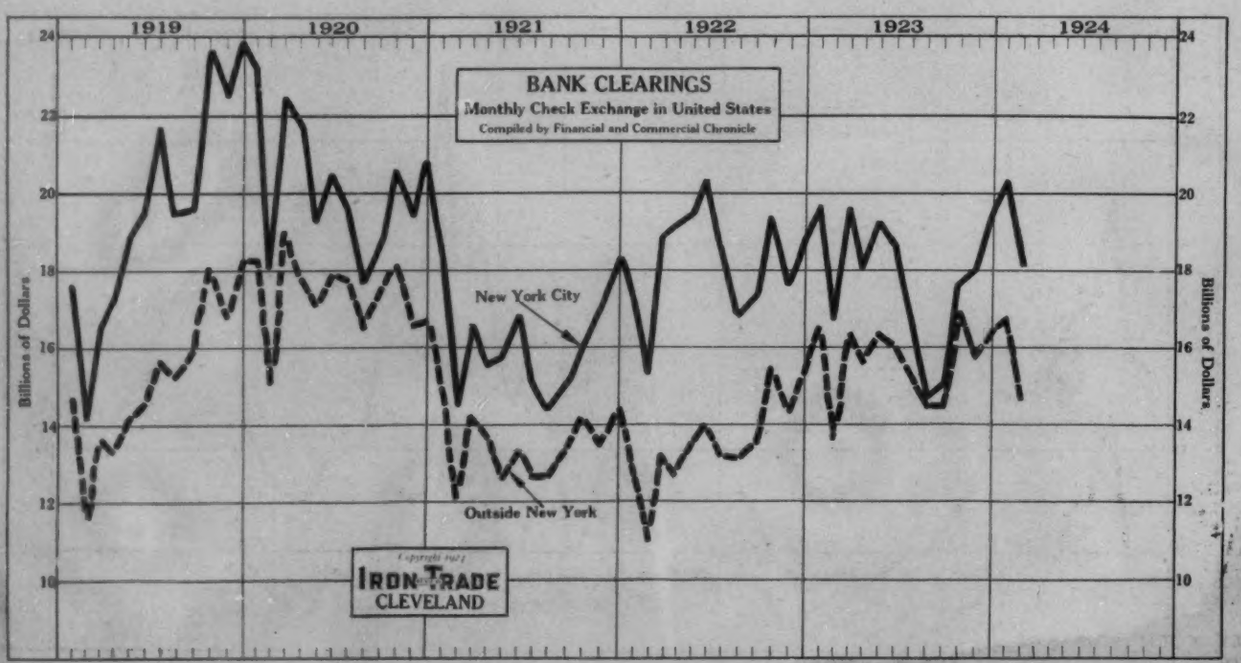


Wheat and Corn

THE first two months of 1924 brought rather striking gains in corn and wheat prices. Recently wheat has weakened sharply and corn is lower. Wheat has decline despite the 40 per cent increase in import duty recently ordered by President Coolidge. Overproduction of wheat in the world is the basic cause of its decline. Of all important crops last year only wheat was below 1922 in value. The value of all crops and livestock of $12,204,000,000 gained $960,000,000 over that for 1922.

Bank Clearings

BANK clearings declined seasonally in February. Compared with February 1923 the total of $32,883,740,000 for the entire country shows a gain of 7.8 per cent. This increase, taken with the fact that average commodity prices are slightly below the level of 12 months ago, shows the current high pitch of business activity. Clearings in New York largely reflecting stock market speculation, increased 8 per cent over 12 months before. In centers outside of New York the gain was 7.5 per cent.



Distributing Costs on Each Job

Manufacturer of Electric Steel Castings Makes Detailed Tabulation of Expenses Including Minor Materials to Each Job—Running Inventories Are Maintained To Show Stock—How Work Is Routed Through Shop

BY E. H. BOEHRINGER

The author is editorial representative at Chicago of IRON TRADE REVIEW.

OBVIOUSLY there can be no standard construction costs on all 6-cylinder automobiles nor on all 12-room residences. From the same viewpoint—that of cost—a 20-pound casting is not always a 20-pound casting to the Nugent Steel Castings Co., Chicago. One casting of this weight may lend itself easily to steel foundry practice, give a high yield, a low labor cost and in every way prove a profitable job. Another casting of the same weight may be difficult and costly to handle from the coreroom to the final inspection, give a much lower yield, require the employment of far more material and slow down the pace of the entire foundry. Therefore, to arrive at a flat price per pound on all castings of a given weight would result in a disproportionate distribution of labor and material costs and overhead. It would be misleading to the foundry and unfair to the buyer of castings. Realizing this the Nugent company has developed an elaborate, yet not burdensome, cost system whereby it keeps before it at all times a running and complete picture of all its cost factors.

This cost system, which is the controlling factor through the plant from the unloading of steel scrap to the shipment of the finished casting, is in consonance with the general layout of the plant. The straight line idea prevails throughout, and from the merging of the raw materials to the making of the metal, cores and molds, the pouring, shaking out and cleaning, there is no retracing of steps. The Nugent plant has the advantage of having been built as a unit and not as a succession of enlargements, and therefore represents the most modern in steel foundry practice. The products are small and medium weight steel castings for motor trucks, agricultural implements, railroad equipment, road building machinery, printing presses, mining machinery, oil well supplies, conveying machinery and allied products. Thin-section castings are a specialty of the Nugent company.

Where the average foundry usually unloads its scrap on one huge pile and attempts only in a makeshift manner once or twice a year to reconcile its inventory, the Nugent company handles each carload of scrap individually. Just outside of the furnace end of the foundry building is a row of bins capable of housing a six-month supply of scrap, each bin having a capacity of one carload. All scrap is purchased on analysis and each car is analyzed before unloading. These data are used by the chemist in making up the furnace charge. Daily reports by the melter show the amount taken from each bin. When a bin is empty the withdrawals from that bin are totaled and checked against the original weight bought and paid for, and if any shortage or overage should exist it is detected and absorbed arbitrarily at once. This insures that costs will be taxed as accurately as is possible with the materials consumed, and eliminates the possibility of a shortage at the end of a fiscal period. Since this system has been in vogue the year's close is approached with the knowledge that the material charges made against cost during the year will correspond so closely with the amount actually expended that a shortage is practically impossible. The correct distribution of all items of expense is considered of such importance that the cost of unloading material from cars is charged against the cost of the material itself.

A departmental cost system reveals at the end of each month exactly where every dollar's worth of material and labor has gone. Running inventories are maintained and since costs are charged

ALL WORK IS CLASSIFIED AND ASSIGNED TO A DEFINITE SECTION, BUT MOVES IN A STRAIGHT LINE THROUGH THE PLANT, WHICH ASSISTS IN KEEPING TRACK OF PRODUCTION

only with the exact material consumed a true comparison month by month is afforded. If any one month's cost seems excessive, it is possible to determine not only in what department the increase has occurred, but also whether a labor or a material item, and what operation or commodity was responsible. Foremen look forward with interest to the monthly cost sheets handed them and a spirit of economy is furthered. These detailed departmental cost sheets are available not later than the eighth of the following month, or in ample time to apply remedies for any items of cost that appear out of line.

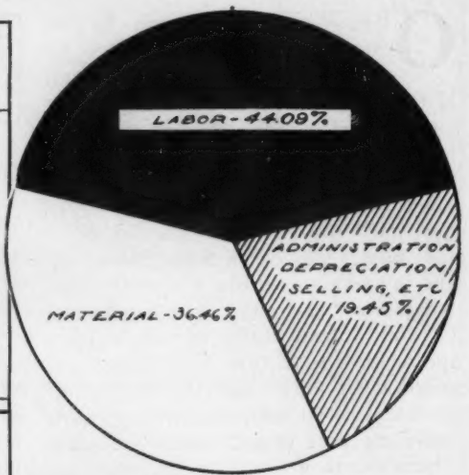
In addition to the departmental cost, which serves as a stimulus to operating efficiency and which must necessarily show an average cost on the entire tonnage produced during the month, specific costs are kept on individual jobs or patterns whenever they run into production quantities. Since this is strictly a jobbing foundry, any job which will insure a molder a full days' work is considered a production run from the specific-cost standpoint. Such castings are weighed with the heads and gates on them to determine the yield and establish the metal cost. All of the molding labor and most of the core and cleaning labor is on the piecework basis, so there is no guess work as to the total direct labor. Record is kept of the defectives because of their effect on the ultimate metal and direct labor figures, and overheads are applied as a percentage on the known factors mentioned. Thus overhead expense is distributed to the individual job in proportion to the direct labor expended and the customer who has a fast-moving job on which the direct labor is below the average is only taxed with his proportion of the overhead.

The individual carload scrap bins are located just outside the furnace or south end of the main building. The incoming railroad track, which handles only incoming raw materials, continues parallel to the main building. Between the track and the main building and just outside of the latter are concrete bins providing storage for sand, electrodes, manganese, silicon, ganister, clay, brick, emery wheels and similar raw materials. These bins are under cover and are served by a 7½-ton crane made by The Whiting Corp., Harvey, Ill. Access is

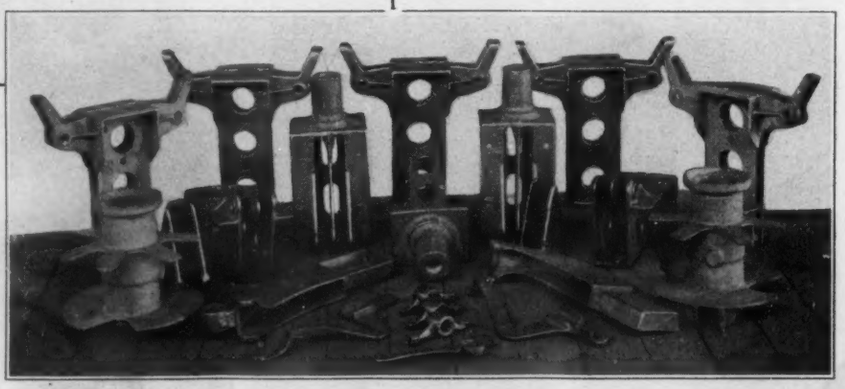
NUGENT STEEL CASTINGS CO.

Production Costs Jan. 1924

Melted Metals	Material Amount	Material Per Ton	Labor Amount	Labor Per Ton	Total Amount	Total Per Ton
10% Silicon	7618	106			7618	106
Burned Scrap	189996	2650			189996	2650
Foundry Scrap	9765	136			9765	136
Plate Scrap	6464	1436			6464	1436
Turnings Scrap	5793	1286			5793	1286
Sheet Scrap	1633	340			1633	340
80% Manganese	1797	382			1797	382
50% Silicon	136	30			136	30
Aluminum	195	40			195	40
Ferro Chrome	96	20			96	20
Clay	37	08			37	08
Electrodes	1989	442			1989	442
Gas	87	02			87	02
Fuel Oil	26	06			26	06
Gasoline	509	170			509	170
Electric Power	807	179			807	179
Various Materials	69	154			69	154
Sand	26	06			26	06
Miscellaneous Supplies	28	06			28	06
Chemist & Laboratory Labor			774	172	774	172
Crane & Transportation Labor			164	36	164	36
General Foreman & Supervision Labor			338	75	338	75
Laborers & Pool Labor			31	07	31	07
Miscellaneous & Elec. Labor			86	19	86	19
Scrap Produced Credit	162	180			162	180
Total Foundry Costs	2692	5980	6151	1136	33815	7516
Melting Department:						
Silica Flour	81	18			81	18
Burned Dolo	568	126			568	126
Burned Lime	98	22			98	22
Clay	28	06			28	06
Repairs & Grinding	47	10			47	10
Direct Labor			1098	244	1098	244
Indirect Labor			946	210	946	210
Repairs Labor			119	26	119	26
Crane & Transportation Labor			141	31	141	31
Nails	26	06			26	06
Various Materials	1407	312			1407	312
Sand	101	22			101	22
Other Supplies	22	06			22	06
Total	5678	1260	2308	512	28361	6302
Flask & Pattern Labor			814	180	814	180
Flask & Pattern Materials	126	226			1869	406
Total	1830	406	814	180	2683	586
Total Melting Costs	7508	1666	3122	692	31044	6888
Finishing Department:						
Acetylene	396	88			396	88
Oxygen	769	168			769	168
Coal	36	08			36	08
Labor General			1133	249	1133	249
Various Labor			99	218	99	218
Sand	479	106			479	106
Other Supplies	307	68			307	68
Emery Wheels	1106	246			1106	246
Rubber Wheels	536	116			536	116
Tumbling Material	240	54			240	54
Welding Labor			517	114	517	114
" Men	364	80			364	80
Annealing Gas	9	02			9	02
" Oil	1613	356			1613	356
" Labor			666	148	666	148
" Various	318	70			318	70
Total Finishing Costs	6241	1374	1332	292	19440	4276
Core Department:						
Day Coremen	38	08			38	08
Commercial Oil	97	21			97	21
Gas	1366	304			1366	304
Labor Direct			3774	838	3774	838
Labor Indirect			2004	444	2004	444
Repairs Labor			10	02	10	02
Various Materials	40	08			40	08
Sand	498	110			498	110
Other Supplies	77	18			77	18
Wire Etc.	24	06			24	06
Total Core Cost	3211	714	5830	1304	9109	2018
Charged Forward to Shipping, Inspection, Heads Cleaning, & Miscellaneous,	46396	10268	48298	10720	93694	20978



AT THE LEFT—TABULATION OF ALL COSTS PERMITS DISTRIBUTION OF EACH ITEM TO ITS PROPER SOURCE—ABOVE—AVERAGE RESULTS SHOW A PROPORTIONATE LOW OVERHEAD PERCENTAGE—BELOW—THE COMPANY SPECIALIZES IN THIN SECTION CASTINGS DESIGNED TO MEET QUALITY REQUIREMENTS

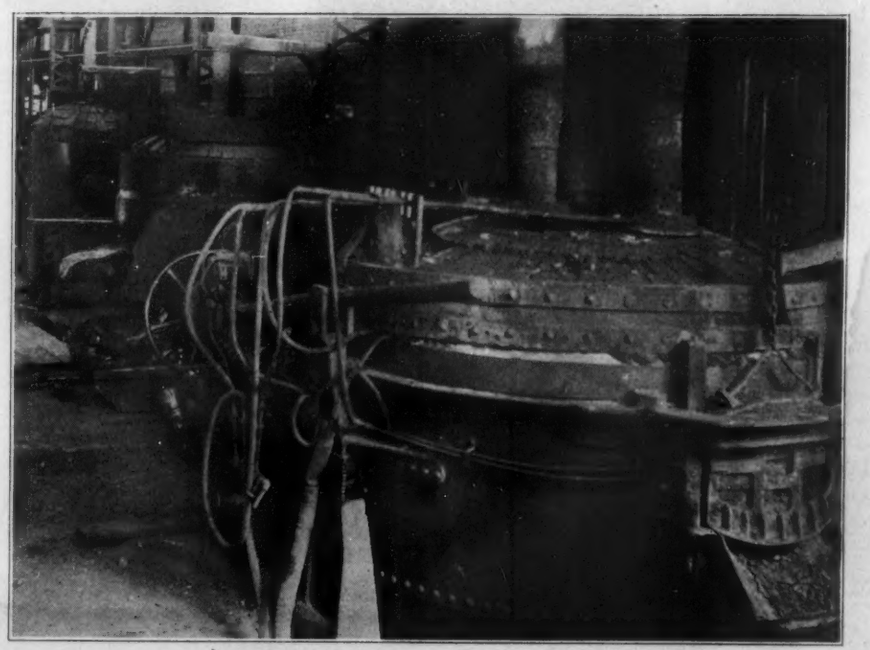


had to the main building at the furnace end, the extreme north end and midway. Metal from the scrap bins is loaded into chutes and transported by an overhead system, installed by Louden Machinery Co., Fairfield, Ia., to the scales just outside the furnace end of the main building. The metal is charged in the electric furnace, of which there are three, from the chutes. The furnace equipment includes one 3-ton furnace built by the Pittsburgh Furnace Co., Milwaukee, and two furnaces—one 3-ton and one 1-ton—

AT THE RIGHT—INCOMING MATERIALS ARE STORED IN BINS AT THE SIDE OF THE UNLOADING TRACK AND BENEATH AN OVERHEAD CRANE

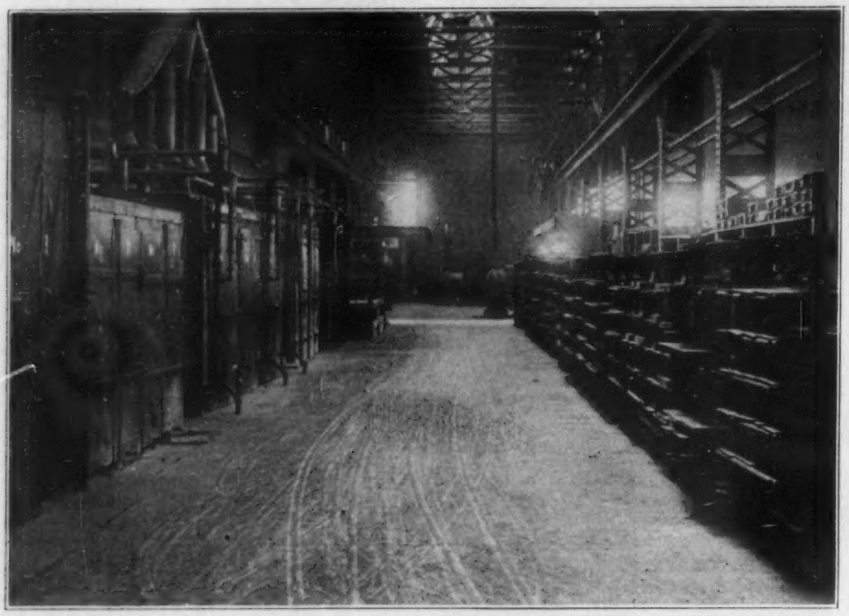
manufactured by the Industrial Furnace Co., Chicago, now the Repel-Arc Furnace Co., Indianapolis.

Molds for the larger work are made in the main bay of the foundry building and are placed upon racks as molded.



ABOVE—CONSIDERABLE SPACE IS DEVOTED TO THE CLEANING, ANNEALING AND INSPECTION DEPARTMENT—AT THE RIGHT—THREE ELECTRIC FURNACES PROVIDE AMPLE MELTING CAPACITY

The equipment of the main building includes one 10-ton and one 5-ton crane erected by Pawling & Harnischfeger, Milwaukee. Small snap-flask work is done in the side bay on the west side of the main building. The floor of this side bay is of concrete. The



EXTENSIVE CORE OVEN FACILITIES ARE REQUIRED TO MEET THE NEEDS OF THE LIGHT CASTING DEPARTMENT

main foundry building is brick, with a roof of the Pond truss type. One sand mixer handles all molding sand and another machine of the same type all backing sand. These machines were manufactured by the National Engineering Co., Chicago. Every particle of backing or heap sand is prepared in a mill and delivered to the molders by grab buckets and storage battery trucks. This practice as contrasted with the usual method of cutting over the heap sand on the floor has, by making it possible to control moisture, brought about improvements in the quality and appearance of the castings. It has reduced losses chargeable to poorly-mixed sand, and at the same time has effected economies in the preparation of the sand.

How Cores Are Handled

The coreroom is ranged along the east side of the main foundry building, corresponding to the side bay for snap work on the west side. All cores are made at the south end of the coreroom on benches provided with hoppers which makes possible the delivery of core sand to the benches by an overhead monorail and dump bucket without interference with the coremakers. The core ovens are located at the north end of the coreroom. Core racks are standard, enabling any rack to go into any oven. Racks are placed alongside the core makers and when filled are pushed to the ovens by means of lift platform trucks. Core makers never carry their cores to the ovens, hand lift trucks being employed exclusively. From the time they leave the core box until they are delivered to the molder they are never handled. Gas and electricity are employed in these ovens for drying cores. These ovens were built by the Ohio Body & Blower Co., Cleveland and the National Machine Co., Chicago. All core sand is mixed in a mill separate from that used for facing but of the same type. This averts any conflict over the use of the mixers.

CORES ARE STORED ON RACKS IN THE BAY AT THE SIDE OF THE MAIN FOUNDRY FLOOR

Practically all of the work at the Nugent foundry is made in green sand. Gas mold driers are employed for pressure fittings, gear blanks, die blocks and similar work requiring dry sand. These permit the molds to be dried on the floors where made. A mold made in a wooden flask and dried by this gas burner is a thorough and complete job. Nothing but hot air reaches the surface, hence there is no burning of the mold surface. Since the heat is applied to the surface of the mold and not from the outside, the tendency is to drive the moisture out of the sand, so that should a mold not be dried thoroughly throughout, that part coming in contact with the metal is certain to be freed from moisture.

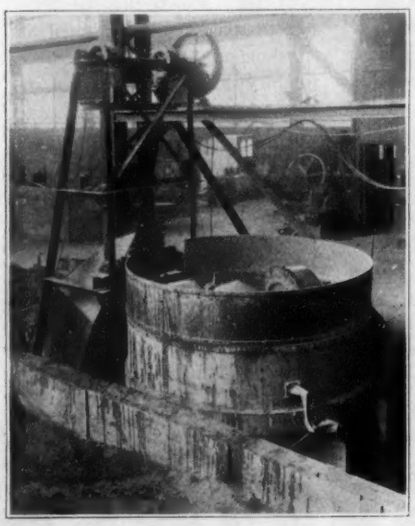
The entire heat of any furnace is poured into a 4-ton ladle and removed to a ladle stand in the center of the molding department. Large castings in the main bay are poured from a 1000-pound crane ladle, while the small work in the side bay is poured from shanks. Molds for the larger work in the main bay having been placed on racks as molded, are poured on these racks; and after pouring the racks are removed by cranes and carried to the shakeout at the extreme north end of the molding floor. These racks are employed to bring the empty flasks and bottom boards back to the molding floor. This practice of pouring on racks also insures that all sand is delivered to the shakeout floor on close to the sand mills. The smaller castings in the side bay are shaken out there, and the sand is loaded in boxes on skids, while the castings are loaded on other skids. Storage battery trucks made by Elwell-Parker Electric Co., Cleveland and Automatic Transportation Co., Buffalo, convey the skids with the castings to the cleaning room and the sand to the sand mills. All old sand is carried to the sand mills and reconditioned.

The cleaning and shipping depart-

ments are located at right angles to the main foundry floor and the entrance to the cleaning department is at the shakeout. The larger castings which have been shaken out at the entrance to this east and west building are picked up by a crane and loaded on racks. If the heads and gates can be removed by a sledge this is done following the shakeout and the castings then are taken to the sand blast. Castings whose heads must be cut off or burned off are sandblasted first and then go to the oxy-acetylene torches, where equipment made by the Air Reduction Sales Co., New York, is utilized.

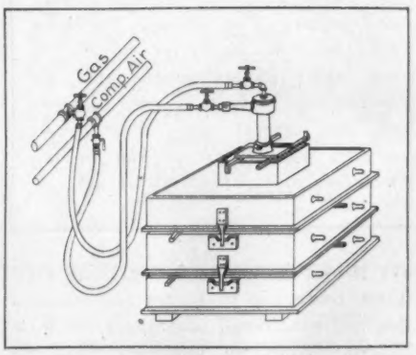
The small castings from the side bay, which have been loaded on skids, are delivered directly to the sprue cutter where the gates are removed. They then are taken to the sand blast. In every instance, sand blast is employed as early as possible in the cleaning operation to enable inspectors to search out defects. These are repaired or defective castings scrapped before further effort is expended upon them. The sand blast equipment comprises one unit each from the plants of the W. W. Sly Mfg. Co. Cleveland, and the Pangborn Corp., Hagerstown, Md.

Castings with surface defects which can be remedied by welding go to the welder direct from the sand blast. Before a casting is welded, the part to be repaired is chipped out to clean metal. This enables the inspector to judge the extent of the defect and guides him in determining whether the casting should be repaired or scrapped, and if the former, it insures a dependable weld being made. While practically all of the welding done at the plant is to rectify slight surface blemishes, so careful is the company to preserve the quality of welds made that the welding operator is one of the few men in the plant not compensated on a piecework or tonnage basis. Every casting is taken either from the sand blast or the welder to the grinders—heavy castings to the swing grinders and light ones to the stand grinders. After grinding, all castings again are inspected, primarily to see whether the heads and gates have been removed flush with the casting and also to scrutinize for defects which may have escaped the first inspection. Castings then are removed to the chippers where fins or rough edges are attacked with pneumatic chip hammers. Once more the castings are inspected to check up on the chipping and to make certain that all holes have been drifted. A 5-ton crane made by the Milwaukee Crane & Engineering Co., Inc., Milwaukee, serves the cleaning department.



CORE SAND, FACING AND BACKING SAND ALIKE ARE PREPARED IN MULLER TYPE MIXERS

ALL CASTINGS ARE ANNEALED UNLESS THE CUSTOMER PARTICULARLY REQUESTS THAT THEY SHALL NOT BE HEAT TREATED



SPECIAL TYPE GAS FIRED MOLD DRYER IS USED TO SKIN-DRY MANY OF THE LARGER MOLDS

Next the castings are piled on annealing racks, which are picked up by the crane and placed on annealing oven trucks. No casting is shipped from the plant without having been annealed, unless the customer states specifically that certain parts are wanted in a raw or unannealed state. The double-end annealing oven is oil-fired and equipped with recording pyrometers. From the annealing oven the castings are taken to the tumbling mills, or in the case of those which cannot stand this process, to the sand blast. From the tumbling mills or the sand blast the castings are conveyed on skids to the final inspection floor, where every casting is inspected and a large percentage gaged to insure the right dimensions. Both of these features are requirements included in inspection standards adopted by the Electric Steel Founders' Research group, of which the Nugent company is a member. If final inspection reveals that any castings are distorted they are conveyed to a 50-ton press for straightening.

The Nugent Steel Casting Co. now employs 225 men and on the basis of castings averaging from 15 to 20 pounds each its normal output is 450 tons monthly. A concrete and brick, pattern storage building now nearing completion will provide over 100,000 cubic feet for this purpose. The company was organized in 1916 as the Electric Steel Co., and operated under this name until the spring of 1923, when it was changed to the Nugent Steel Castings Co. Officers of the company are: President, Charles Piez; vice president and general manager, William J. Nugent; treasurer Prentiss L. Coonley; and secretary, C. A. MacDonald.

Solving Problems in Small Plant

Piecework Proves Ideal Method Where Given Fair Trial, but Problem Still Remains Individual—Waste Must Be Kept Down for New Cycle of Competition—Repair Work Out of Place in Production Plant

BY W. C. TROUT

INDUSTRY in America presents an extremely diversified picture. Among our thousands of manufacturing plants may be found almost every conceivable condition. There are one-man shops, and huge industrial plants whose workers number 10,000 or more. The processes employed range from those of hand labor to those completely automatic. Other extremes are represented, hand-to-mouth existence and prosperous efficiency.

All plants have one purpose in common, and that is making a product at a salable price and at profitable cost. We are in business for profit. We have problems of varying nature, depending on the work we are doing, but three problems are of interest practically to all. The first is the efficiency of labor; second, waste in industry; and the third, the question of doing repair work in a manufacturing shop.

Taking up the first problem; Do we get value received for wages paid, a reasonable day's service from the average employe? Present wages are 80 per cent higher than in 1914. How much more efficiency are we getting with the same tools, men and equipment?

Generally speaking, workmen do not seem to have the same interest, nor are they as efficient as they were in prewar days. This statement is based more on reports from others in different industries, than on our own experience. In our business, aside from common labor, we are getting more work, in quantity and quality, than ever before. While our men are entitled to some credit for individual initiative and interest, this is largely due to encouraging more efficient supervision, by planning and scheduling.

On the railroads, in the mills and factories, short hours, restricted output, habits originating during the war, have made it necessary to use two men in some places where one was needed before.

New Demand for Efficiency

Students of economics recognize the fact that we now are in a new cycle. Regardless of what enthusiastic prophets say, the majority of us are aware that we are facing a period of declining profits and keener competition. This means the day of quack remedies is past. Cure-alls will find no place in our industrial life during the next 10 years.

Regardless of European competition and manufacturing conditions, American workmen are going to retain what they have gained in wages, better living conditions, ownership of homes and automobiles, and educational advantages for their children. American workmen have the best living conditions on earth, and with steady employment and ordinary thrift they can have all of the pleasures of this life that are worth having.

Facilities for low cost of production have been increased wonderfully in this country, far in excess of those required to supply our own needs, so that with an inactive export market, competition is certain to be keen. The fact is we must produce goods of quality in greater quantities at less cost, to hold our own not only against competitors in this country but European manufacturers as well.

The next problem mentioned, the elimination of waste, is one that the new cycle will emphasize. Waste is everywhere, and although we talk and lecture, keeping the subject before our foremen and workmen we make little headway. It seems to the average employe that this "little thing" isn't worth saving. "The firm has plenty of money, what's a nut or a bolt or even a 2-inch twist drill if carelessly broken? It will never be missed!"

It is the same in the foundry. "Iron is cheap, why worry when it's wasted? What's the difference if I do make a bad casting, it won't be noticed and the chances are they'll never mention it!"

Isn't that the truth? How easily we overlook this sort of thing. Foremen take it as a matter of course and get so accustomed to it that what appears small to them is really an important leak, and a waste of far-reaching proportions. Yet management is largely to blame.

Great Waste in Foundries

The foundry is an old offender when it comes to waste. We have melting loss which can be eliminated to some extent by careful charging. Then we have cupola waste which can be avoided to some extent by use of the cinder mill or magnetic separator, though few foundries have them and they do not believe the iron and coke recovered pays for labor, power and investment. With this should be listed the iron spilled from the ladles in transporting and handling. Some shops offer prizes to molders to eliminate this waste, yet few of us pay much attention to it.

The greatest waste is the percentage of defective castings which involve time, overhead and material, the percentage differing according to the class of work. Our own foundry losses, despite all we could do last year, were slightly over 10 per cent, and yet we think we got fairly good tonnage per man. Considering the total tonnage our costs per ton of good castings compared favorably with other foundries of our size.

The writer has made a particular study of this question and has directed inquiries to many foundrymen as to the percentage of their bad castings. One would conclude that our showing was poor, indeed, judging by the replies received. Many say: "Why, our waste is not over 2 per cent," or perhaps some with a higher regard for veracity, claim the waste is not over 4 per cent. But it is questionable if any one that was asked the question knew exactly what his percentage was. The answers were

Learning To Care for Machines

"MANY manufacturers of machinery and equipment design it so that by applying new parts it may be brought back to its original standard. Consequently there is not so much repair work as there was 20 years ago. Industrial managers are finding cheap equipment exceedingly expensive and they buy the best, with all parts renewable. The equipment is well lubricated and this reduces upkeep and repairs. The average workman who uses machinery or directs its use owns an automobile and he knows that to keep it going requires oil and careful use. The lesson usually goes home to him in the handling of the property of others."

Abstract of paper presented at seventh annual meeting of Southern Metal Trades association, New Orleans, Feb. 26-27. The author is associated with the Lufkin Foundry & Machine Co., Lufkin, Tex.

always given merely as approximations.

There also is a serious waste in tools and flask equipment that would be well to keep in mind when it comes to figuring losses. Early in my experience, when working for one of the largest plants in the North and discussing costs of castings, the cost department head remarked that "the average jobbing foundry works two months out of the year for itself without producing anything for any one else." After operating a foundry nearly 20 years the writer came to the conclusion the accountant was not far wrong. If a foundry is 70 per cent efficient, it is a "crackerjack." Few reach this mark. More are nearer 60 than 70 per cent. A study of this problem will help to increase efficiency, but it is one that under the hourly rate system is hard to solve.

Waste in Machine Shop

There is too much waste in the machine shop as well as in the foundry. One seldom hears of too much stock on a casting, but there is always complaint when stock is scant for finishing. This is a waste that is ever present, and even when reported is not always given the attention that it deserves, for not only time but material is wasted. But if the castings were machined by the piece, no one would have any rest until the surplus stock was removed from the patterns. We used to think the proper way to get out machinery was to finish it so far as possible in the foundry, but this has been carried too far.

Another source of wasted time and material is in assembly work, due to poorly made castings or to expecting too much on rough fits. This is not always followed up to prevent recurrence in the future, unless the whole organization is aroused and patterns changed at once.

If we eliminate the wastes and losses that are due to wrong management our employes will learn the lesson all the sooner, for the elimination of waste is a matter for example and education from the manager down.

The other problem mentioned is that of doing repair work in a manufacturing shop. Does it pay to take on repair or emergency work? Is there a plant doing this successfully without doing it in a separate department? The writer does not believe it is practical or profitable.

When we commenced manufacturing nearly 20 years ago we took in everything offered to us and our shop slogan was "No job too large, and none too small for our attention." When we began manufacturing we did so simply to fill in the time when no repair work was at hand. As our manufacturing business developed we continued the repair work entirely too long. Had we organized our plant for manufacturing as we since have, years ago, we would have been decidedly better off, financially and otherwise. Although we still are compelled to do some major repair jobs, we confine it strictly to repairs on our own manufactured articles, and then for favored customers only.

To manufacture machinery and equipment successfully requires a highly organized plant where work can be planned and scheduled to be finished at the lowest possible cost. Unless repair or emergency jobs can be done in a separate department, which is seldom practical, it breaks up a set schedule to such an extent that there will be serious loss in time and money in the manufacture.

Repairs should be done in a repair shop where outside of one or two men there is practically no overhead. The owner should get enough overhead to cover idle equipment and losses on tools for the business is a feast or a famine. There is no question that a shop devoted exclusively to repair work can make money, if the volume is steady enough and the investment is held within reason. But in a manufacturing shop —never!

Repair work requires an all-round mechanic who has ingenuity and skill, and this class as a rule are slow workers. Just the opposite type of man is required for production and manufacturing. The production man may be trained on one machine in a few months, yet in his own estimation he is worth as much as the skilled mechanic. The result is the shop has too high wages.

It is practically impossible to make much progress with the piecework or premium systems in a shop having a large variety of work, and also do repairing.

Piecework System Honest Way

"ANY change from day work to piecework or premium system meets with intense opposition from labor, specially when there is not much confidence in the management. Yet the really honest way to compensate the individual is to pay him for what he does, giving him a fair portion of the value of what he makes. He will earn more and produce more, with a greater degree of satisfaction to himself as well as to his employer. Shops that have adopted such systems would have strikes if they attempted to reinstate the hourly or day rate. Since the dawn of industrial history, men have been groping for the ideal method of compensating the individual worker, and like other problems this must be worked out by each individual plant."

Gage Steel Committee Meets in Washington

Development of the wear test on steel gages, review of experimental work on the effect of heat treatment, possibilities for improving gages and plans for future work of the gage steel committee were discussed at a recent meeting attended by about 20 steel gage makers and users. The meeting which was held at the bureau of standards, Washington, was presided over by Chairman B. L. Blood, of the Pratt-Whitney Co.

That the hardness of gages as ordinarily measured has no simple relation to resistance to wear was brought out. Experiments so far carried out in the rate of wear, it was shown, have given somewhat contradictory results. Further experiments will be made. Major J. O. Johnson, chief of the gage section of the ordnance bureau of the army, reported on the series of gages in use at Frankford arsenal and said gages made from chrome-bearing steel showed a much lower rate of wear than similar gages made from gage steels more commonly used. It is planned to have the next meeting the latter part of March or early in April in Detroit, so that the committee may be in touch with gage users among the automobile manufacturers.

Using Iodine Properly After Accidents

Some valuable suggestions on the use of iodine in industrial and other accidents were embodied in a recommendation drawn up at a recent meeting of the Conference Board of Physicians in Industry in New York. This board of physicians, which is affiliated with the National Industrial Conference board, 10 East Thirty-ninth street, New York, was organized to improve conditions surrounding employment and to safeguard employes in the industrial establishments of the country against the danger of accident, infection and other preventable disabilities. Prominent medical men attending the sessions reported that the misuse of iodine often leads to unsatisfactory results. They have seen in their work as supervisors of dispensaries maintained by large industrial corporations the results of mistakes from using iodine in cases of injury. Similar conditions also exist in many homes. Fol-

lowing are the recommendations made by the board of physicians:

"Tincture of iodine should be used only in and around the wound. It should be applied within 8 hours after the injury—the sooner the better.

"Every skin, no matter how clean it may appear, has thousands of germs on its surface ready to poison a fresh wound before nature can build a defense against them. If iodine is applied immediately, or a short time following the injury, these germs are destroyed before they have a chance to infect the wound. If application of iodine is delayed beyond 8 hours, the germs will have grown into the wound so deeply that the iodine will not reach them.

"One thorough application of iodine is enough as it has no healing properties. It should not be applied too strong, as sometimes occurs when the solution has been made stronger by leaving the cork out of the bottle and allowing the contents to evaporate.

"Apply folds of gauze (bandage, not cotton) directly to the wound. Never soak the gauze in iodine as this will burn the skin. Never use tincture of iodine on unbroken skin surfaces as it frequently irritates and often blisters, producing in turn a wound that later may become poisoned.

"In other words, apply tincture of iodine immediately, or as soon as possible after the injury occurs; apply once only; apply only to the wound itself and the skin immediately surrounding. Do not apply too strong nor to unbroken skin surfaces."

Group Plan of Economic Study Is Best

IN TEACHING economics to employes the group discussion method gives the greatest promise of success. This conclusion is expressed in a report by the American Management association's committee on economics for employes, of which A. J. Beatty, American Rolling Mill Co., Middletown, O., is chairman. Carl F. Dietz, Bridgeport Brass Co., Bridgeport, Conn., also is a member of the committee which includes leaders in various manufacturing enterprises, a representative of a large public utility company, another from a nationally known insurance company, one from a university and one from a public high school. The methods used by the American Rolling Mill Co., and the Bridgeport Brass Co., both of which incorporate the group discussion plan, have been described in IRON TRADE REVIEW. The committee gives a synopsis of the means employed by many business and industrial institutions, and points out some of their advantages and difficulties. Discussing methods of presentation, it states:

"The lecture method seems too abstract and technical. This is probably due to the fact that in most cases the lectures are given by theoretical economists and are over the heads of the students. Bulletins and house organs seem to lack the vital personal contact of the instructor necessary to effective teaching."

The committee's survey shows that a large number of technical societies and many business and commercial associations are carrying on some phase of economic instruction, notable among them being the Associated Industries of Massachusetts.

The committee devotes some space to giving a clear definition of economics, and the subject matter that it involves. Among the statements contained in this section is:

"Since the study of applied economics is designed to create a better understanding between managers and workers, we believe that every company ought as one of its first lessons in applied economics, to exhibit and explain to its employes its annual financial statement showing assets and liabilities, its main disbursements, overhead, production and sales costs, its profits or losses, earnings and surplus. The doing of this will do more to develop understanding and co-operation than any other one thing, provided, of course, the statement can safely be shown to employes. If it cannot be shown because it conceals or reveals some unsound economic policy, the question arises whether the management ought not immediately to set its house in order, clean out the skeletons and let the light of day in on its business conditions and policies, and its industrial relations.

Methods of Teaching Vary

Commenting on the work of the Associated Industries of Massachusetts the committee says:

"The Associated Industries of Massachusetts, through its president,, Col. Charles R. Grow, has issued a 'series of editorials' called the 'Elemental Principles of Industrial Economics.' If these editorials could be re-edited by one competent to do so, so as to reduce them to 'lessons' in a better teaching form, they would constitute a much more valuable contribution to a field now very poorly supplied with such material.

"Few successful attempts have been made to write economics text books for employes. The theoretical economist so far has not attained a marked success in attaining either the right viewpoint or the requisite vocabulary. 'Too often books on economic and financial subjects are so theoretical and abstract that the practical man of affairs, after the perusal of a few pages, turns from the book in despair if not in contempt. Unfortunately, there has developed a group of professional economists whose jargon is not always intelligible even to themselves. Unfortunately, also, there is a certain type of economist who is more concerned with logical deductions from assumed premises and in discussing the problems of a hypothetical world than he is with conditions in the actual world in which he lives.' The business or industrial leader has neither the time nor the skill to write, so the field still awaits attention.

"However, some very much worth while publications in this field have appeared in the past few years. George Roberts, of the National City bank, has edited a series of 24 monographs or booklets entitled, 'Economics for Executives,' in which he has been very successful in writing for the laity. Each volume is devoted to a single topic."

The monographs are used at the American Rolling Mill Co.'s various plants.

The plans adopted by the American Institute of Banking, American Bankers' association and National Institute of Credit also are reviewed. These consist mainly of lectures. The use of motion pictures for teaching some of the elementals of economics is said to be satisfactory "within a limited scope." However, the committee believes "this method does not yet seem to have been developed to the point where economic principles and theories can be successfully taught."

Regarding group discussions, which it refers to as the most successful, the committee says several conditions must be fulfilled, among them being: Small groups, 10 to 12 individuals; well-posted group leaders; discussion kept to the point; study assignments in readable texts; skilled supervision of leaders, and a well-defined objective. Some observations and criticisms of the method follows:

"The men do not read the work assigned.

"They like to argue and depend upon their own knowledge for a basis of argument.

"They allow their arguments to carry them far afield from the subject at hand.

"The leaders seem to be familiar with the subject, but are not able to ask the questions, or suggest the topics, in the proper manner."

Some suggestions to improve the procedure are given as follows:

"Organize material of economics in form of lessons.

"Have one subject as a lesson; outline first, its structure; second, its function; and, third, how it actually works in relation to the company's activity.

"Supplement each lesson with a series of vital questions, carefully worded, to bring out the essential thoughts, and yet continuous, to keep discussion from rambling.

"Then add to each lesson, problems of different degrees of difficulty, and of varied types; so that they would present a general survey of the economic field, as well as the relation to it, of the particular subject of that lesson.

"Each lesson outline should be printed on loose leaves and distributed to the students at the close of each meeting."

Making Plain and Headless Tacks

Industry Was Established About 1800 when the Product Was Hand Made—Automatic Tack Machine, Developed in 1806, Remains Practically Unchanged in Its Operation—Only Household Tack Demand Remains Constant

BY HERBERT R. SIMONDS

AMONG the many small articles which help to build up the country's enormous consumption of iron and steel, the common tack takes an important place. Tacks are distinguished from nails chiefly by their method of manufacture, but in reality they usually are smaller and sharper. The ingenious machines which produce tacks could be modified fairly easily to turn out a longer product in a great variety of shapes, but wire-made products more readily fill the demand for this class of material.

The demand for tacks has passed through periods of wide fluctuation due to changes in style and to new inventions and new customs. Some 30 years ago carpets were used extensively and the demand for tacks was heavy. The increasing use of rugs in place of carpets, however, caused a falling off in the tack industry. But rapid progress in the production of automobiles soon developed a new field for tacks.

Variations in furniture design constantly are causing fluctuations in tack demand. The shoe industry always has been one of the chief outlets for tacks, but even here changes in design cause a variation in the number of tacks used. The rubber heel industry has shortened the average length of heel tacks by nearly 50 per cent. General household demand for tacks has remained fairly constant throughout the last 10 or 15 years, and this accounts for a surprisingly large proportion of the country's production.

The country's tack supply is turned out by a relatively few manufacturers, about 30 plants, and the machines which are used are made by not more than three or four companies so that it is rather simple to determine the total number of tack making machines in operation and, by assuming an average production per machine, to form a close estimate of the annual tonnage of steel consumed for this purpose. The industry is an old one, thus any attempt to list the principal manufacturers usually leads back to its early history.

The first machine to make tacks successfully in this country was designed and built by Thomas Blanchard about 1806. A life history of Mr.

Styles Affect Demand

CHANGES in styles and customs affect the consumption of tacks to a marked degree. Startling this may seem, but tack manufacturers vouch for its truth. When carpets were used, demand was heavy; with the introduction of rugs, demand tapered off. Changing furniture designs constantly is causing fluctuations in the consumption of tacks. One of the chief users of tacks is the shoe industry, but here changes in style cause a varying consumption. Household demand, on the other hand, seems well stabilized, little variation having been noted during the last 12 years. Perhaps the newest important field is found in automobile construction, this business showing gain year after year. In a period of 120 years tack production has grown to about 75,000 tons per year, a development made possible only by the invention of the automatic tack machine. In this article, the author traces the history of tack manufacture.

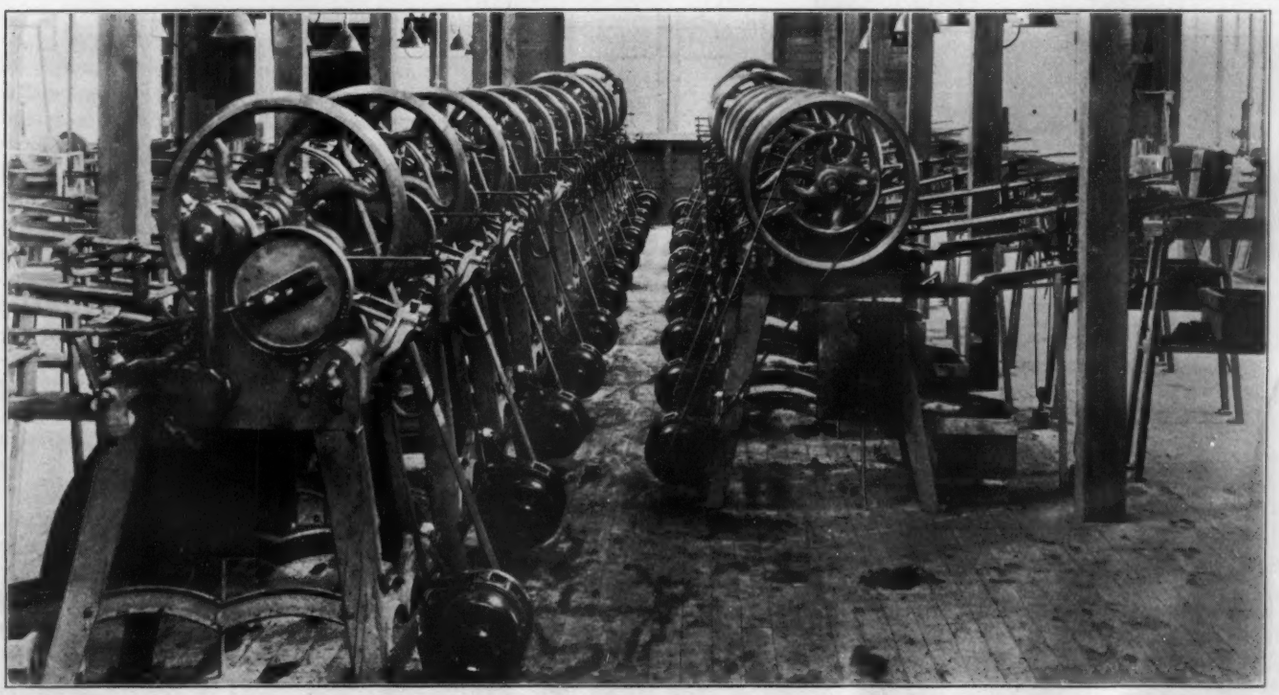


FIG. 1—A DOUBLE ROW OF TACK MACHINES IN A NEW ENGLAND PLANT. THESE MACHINES, WHICH HAVE A CAPACITY OF ABOUT 300 TACKS PER MINUTE, HAVE INDIVIDUAL MOTOR DRIVES

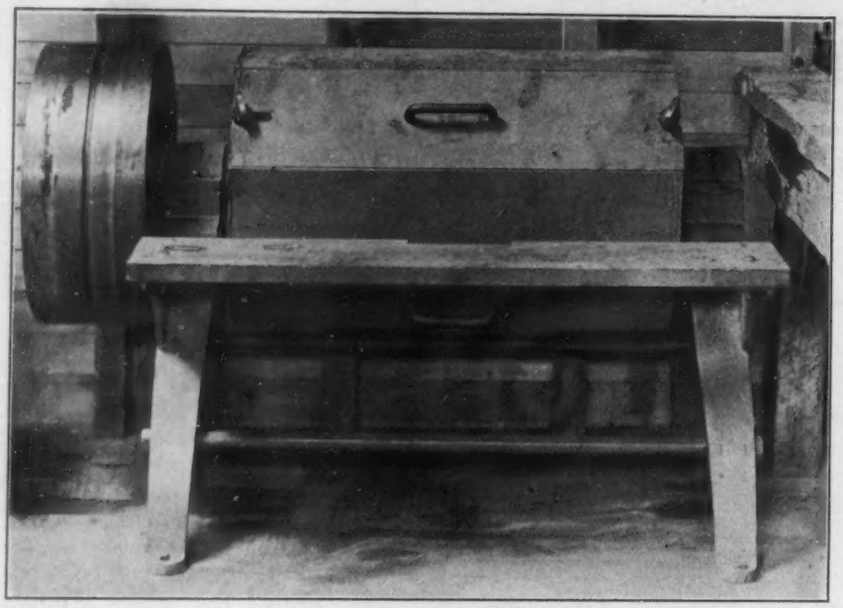


FIG. 2—MACHINE TACKS MUST HAVE A SMOOTH FINISH AND THIS IS OBTAINED BY TUMBLING THEM FOR HOURS IN CAST IRON DRUMS

Blanchard by George Iles gives an interesting account of the development of this first machine. Thomas Blanchard's elder brother, Stephen, operated a tack making factory at West Millbury, Mass., and employed about 20 men. These men made tacks one by one by hand, and needless to say, their work was monotonous. As young Thomas grew up, he was given a job making tacks in his brother's factory and he worked at this until he became so disgusted with the monotony of the task that he determined to imitate the hand method as closely as possible with a machine. He was about 18 when he first began to build a tack making machine. He met with discouragement from all sides, but kept at the project for six years at which time he felt he could not further improve his model which turned out 200 tacks a minute with better heads and points than those of hand production.

This early machine of Blanchard's was so well designed that inventors and engineers down to the present day have failed to alter it materially. Blanchard sold his patent for the machine for $5000 which he thought was a good price. The purchasers, however, realized a fortune out of it.

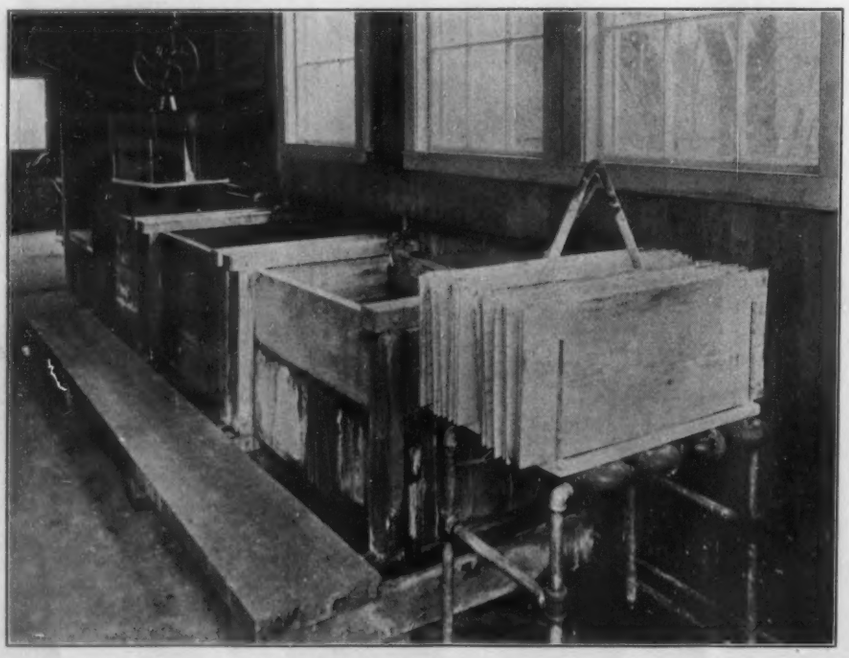


FIG. 3—BEFORE USE TACK PLATE IS PICKLED IN HOT SULPHURIC ACID, IS RINSED, WASHED IN LIME WATER AND DRIED ON STEAM COILS. THIS ILLUSTRATION SHOWS THE APPARATUS WHICH IS USED

Today the manufacture of tack making machines is almost entirely in the hands of one interest, the Henry Perkins Co., Bridgewater, Mass. A few large manufacturers make some of their own machines, but such production forms a small per cent of the total. Following natural lines, the growth of the tack making industry centered around eastern New England, and today, while there are several large plants in the Middle West, the bulk of the country's supply of tacks is produced within the New England borders.

For 30 years or more the Henry Perkins Co. has kept a close record of the location of all of the tack making machines which it has built. This list suplemented by the records of other manufacturers and checked by the notes and opinions of men associated with the industry gives a total of 4800 workable machines in existence in this country at the present time. Some of these machines are not in operation, and the operation of the others, of course, varies with varying market conditions.

Steel Consumption Is Large

During 1923 the largest producers operated close to normal capacity, and it seems conservative to assume that 80 per cent of the above number of machines, or 3840, were in operation throughout the past year. These machines vary in production according to the nature of the product, but on the average they produce 250 tacks per minute per machine.

The average weight of these tacks is difficult to determine. Records of one manufacturer show it to be 500 to the pound. On this basis ½ pound of steel would be used per minute per machine, or 35 tons a year, which for the country's 3840 operating machines would indicate a total consumption of steel for the tack industry of 134,400 tons. Tack plate manufacturers, however, claim this figure too high. One authority familiar with production of tack plate places the annual consumption in the tack making industry at from 60,000 to 75,000 tons. Certain detailed records of different tack manufacturers serve to check this estimate of the total consumption of tack plate. One of the largest manufacturers gives a figure of 22.5 tons per year per machine which for 3840 machines aggregates 86,400 tons. From all this it may be stated conservatively that 75,000 tons of tack plate are used in this country annually.

Tack plate is the name given to steel sheets which are rolled for the tack

manufacturer. After the invention of the tack making machine, iron plate was used exclusively for many years and to some extent as late as 1890. In the early days of the industry, bars of iron were imported from Sweden and rolled into narrow sheets or strips in small mills scattered throughout New England. These Swedish iron bars were 5/8 inch thick and varied from 3 to 5¾ inches wide. One of the prominent early mills for converting these Swedish bars into tack plate was that of Lazell, Perkins & Co. at Bridgewater, Mass. The rolls in this plant were two high and hand-operated, and as the rolls were non-reversible, the strip after rolling had to be returned to its first position over the top of the rolls.

The operation was extremely simple. The bars, cut to a length sufficient to make a strip about 10 or 12 feet long and 8 or 10 inches wide, were heated in small hard coal burning furnaces known as Lehigh furnaces. When the bars reached the proper temperature they were taken out and rolled over and over again through the small single stand of rolls. When the strip was finished, it was cut into 36-inch lengths and then cut up into thin strips ready for the tack machines.

Domestic Steel Substituted

Swedish iron was expensive, and about 1880 one enterprising importer introduced a soft steel. The Swedish iron at that time cost about $70 a ton and the soft steel about $40. At first it was necessary to give away the steel to get manufacturers to try it out. The improvement in the finish and strength of the tacks was enough soon to convert most manufacturers to the use of this new material. The first soft steel used was imported, but about 1890 several American steelworks started rolling sheets for the tack industry. At this time about half a dozen mills in New England rolled on small rolls, similar to those described in the plant at Bridgewater, all of the tack plate used in the country.

Use of wider sheets, of course, required fewer edge cuts and a consequent saving in scrap. For this reason the larger steel mills with sheets from 30 to 40 inches wide soon drove the small New England mills out of business, and the narrow roll industry practically ceased in 1905. Since that time there has been a steady improvement in the quality of sheet manufactured for tack making. The industry is a specialized one, and practically all the material is made by two or three concerns which by working in close co-operation with the tack manufacturers have developed a sheet well suited to the rigid requirements of tack consumers.

Tacks are made by slicing or shearing off wedge-shaped pieces from the end of strips of tack plate. The machines which perform this work are highly ingenious, but relatively simple. A double row of these machines is shown in Fig. 1. This view was taken in the newly constructed plant of R. C. Waterman & Co., South Hanover, Mass. Incidentally, this is the only tack making plant in the country which is completely equipped with individual electric motor drive. These machines have a capacity of about 300 tacks a minute in the smaller sizes.

Tack plate comes from the manufacturer in sheets from 12 to 40 inches wide and 36 inches long. At the tack making plant these sheets are first pickled in hot sulphuric acid, washed in cold water, then dipped in boiling lime water, and afterwards dried on steam coils. Fig. 3 shows these operations at the Waterman plant. The sheets ready for treatment are shown supported on an overhead trolley in the background. The tank directly below the sheets contains the pickling bath, the central bank contains clear water, and the tank in the foreground contains a bath of boiling lime which is kept boiling by the introduction of live steam. A batch of plates which has been treated is shown drying on the steam coil in the foreground.

This treatment of the tack plate greatly increases the life of the tools. In the early days of the industry the plate was not pickled and under such conditions the shearing and head forming tools were apt to wear out in a few hours or a few days at the most. One day a manufacturer of experimental nature tried pickling his sheets, and this simple process lengthened the life of his tools by tenfold or more. This manufacturer did not acquaint his competitors with his newly discovered method at once, and for some time enjoyed the marked advantage which it gave him. Now all manufacturers pickle the tack plate before starting to make tacks. The coating of lime which is used to neutralize the acid makes it easier to hold the material in place during the cutting and upsetting and also seems to act as a lubricant to the cutting tools.

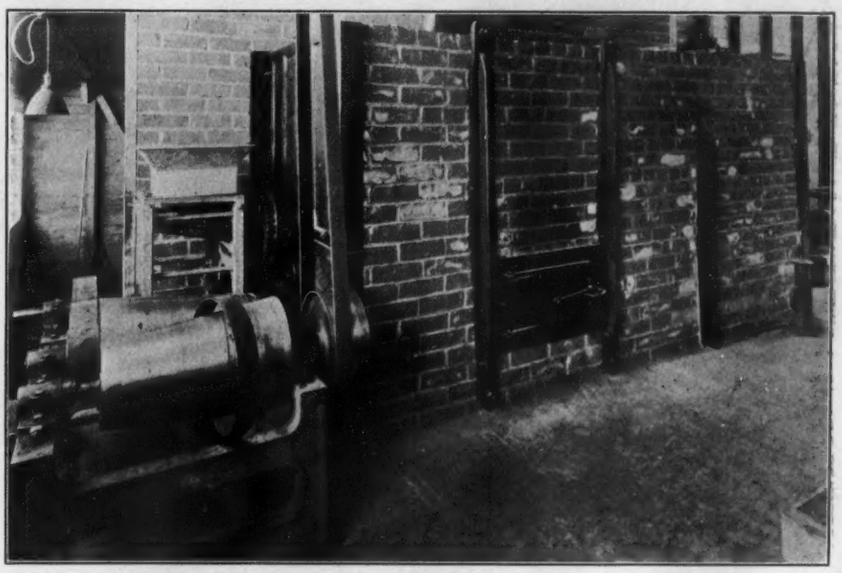


FIG. 4—THE BLUE TINT ON TACKS IS PRODUCED BY PASSING THE TACKS THROUGH AN OVEN MAINTAINED AT 1200 DEGREES FAHR. AN INCLINED ROTATING DRUM CONVEYS THEM THROUGH THE OVEN

After the plate has been prepared as described, it is cut up into strips which are slightly wider than the length of the tack to be made. The machine which cuts these strips is similar to a heavy plate shear, but is known in the tack plant as a chopper. It is designed especially for rapid operation and has an attachment which throws the first and last cuts into a container separate from the one which catches the correctly sized strips. The first cut is made to square up the edge of the sheet and is seldom over 1/16-inch wide.

The sheets are fed by hand, but because of a safety device on the machine, it is impossible to cut strips up to the limit of the width of the sheet. This means that a strip of odd size is left over at the end. These end strips, however, are not considered scrap. They are gathered together and at odd intervals are re-

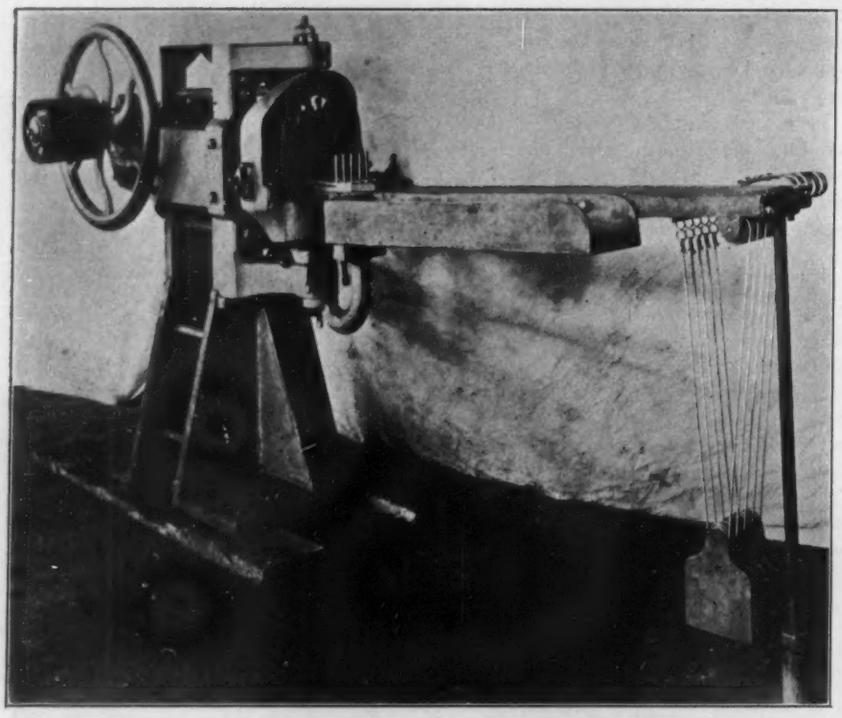


FIG. 5—THE MACHINE FOR MAKING HEADLESS TACKS IS CALLED A VIBRATOR. THE CUTTING KNIVES OSCILLATE BACK AND FORTH TO PRODUCE THE WEDGE SHAPE CUTS ON THE TACK PLATE

claimed by the use of a side stripper attachment, which clamps onto each little strip and feeds it under the knife to within ⅛-inch of the edge which is held. Usually the pieces reclaimed by the side stripper are cut into narrow pieces for use in making the smaller sizes of tacks. Heavy plate, of course, cannot be used for small tacks.

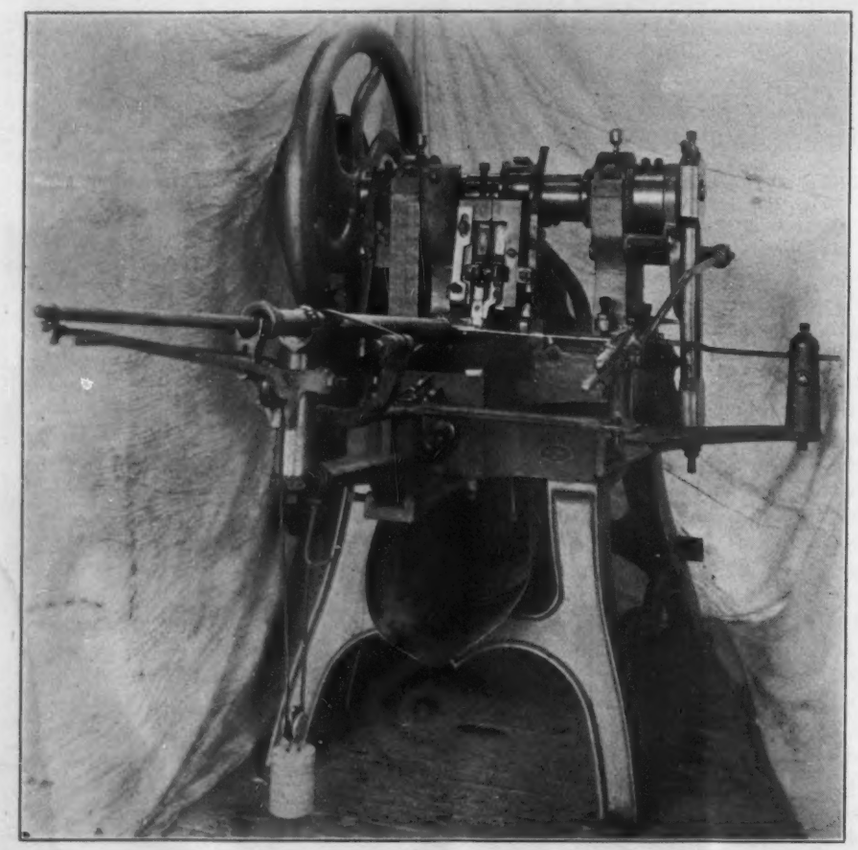


FIG. 6—THE COMMON TYPE OF TACK MACHINE. STRIPS OF TACK PLATE, FED THROUGH THE PIPE IN THE FOREGROUND, ARE CUT INTO SMALL WEDGES. WHEN CUT IS MADE THE LEFT-HAND KNIFE STOPS BUT THE RIGHT-HAND KNIFE FOLLOWS THROUGH

Operation of the Machine

The narrow strips of tack plate 36 inches long and of a width corresponding to the length of the tack are fed into the tack making machine through a cylindrical or pipe-shaped guide. This guide is set at a slight angle with reference to the cutting knives. A first cut takes off a wedge which at its wide end is half the thickness desired for the tack. This first piece is waste. It is cut off for the purpose of giving the desired angle to the end of the strip. After it is cut, the whole strip is turned over. This is done by turning the pipe guide through 180 degrees. The strip is then fed forward until just enough steel extends beyond the knives to produce the desired tack.

The cutting operation takes place between a lower solid bed knife and two upper knives which are held close together so as to form one single cutting edge at the time of making the cut. One of these knives, the one on the left-hand side, is called a lazy knife, and stops as soon as the cut has been completed. The other knife, called a leader knife, continues its downward stroke, the small piece which has been cut being held firmly with the aid of a finger piece called a bearer which comes up against the strip from below.

In this way the small blank from which the tack is to be made is transferred to the gripping dies located about an inch below the point of cutting. These dies fasten tightly about the pointed portion of the blank while a header tool moves forward from the right hand side of the machine and delivers a blow which forms the head of the tack. The dies then open and a knock out attachment called a clearer shoves the finished tack into a pan or box beneath the machine. Meanwhile, the two upper knives return to the top position, the pipe holding the strip turns back through 180 degrees, and the whole operation is repeated. If heads of round or other shape are desired, it is merely necessary to use dies of a corresponding outline.

Many Finishing Operations

In actual practice, the so-called finished tacks which leave this machine are far from being finished. Usually they are first put through a bluing mill or oven. One such oven is shown in Fig. 4. Here the tacks are dumped into the hopper shown at the left

from which they pass into a rotating drum the end of which may be seen projecting from the brick oven. This drum inclines slightly to the horizontal and the tacks pass slowly from one end to the other. At the same time the tacks are tumbled about so that all surfaces are presented to the oven heat. The temperature of the oven is approximately 1200 degrees Fahr.

The tacks leave this process with the familiar blue tint which in reality is produced chiefly for looks. However, it does prevent rust to some extent. After the bluing operation, the tacks are sifted to eliminate splinters, slivers, and burrs. A sifting machine in use at the Waterman plant is shown in Fig. 7. It consists of a drum or revolving screen containing slots slightly smaller than the heads of the tacks which are to be sifted. As in the case of the bluing oven the tacks are dumped into a hopper from which they pass into the interior of the revolving screen. The cleaned tacks drop out at the left end and the splinters drop into the pan which is seen directly below the screen.

Practically all tacks placed on the market for general purpose use pass through these first two operations. Subsequent operations, however, vary according to the various uses for which the tacks are intended. In the shoe industry, which as has been stated, takes a large portion of the country's tack production, many of the operations using tacks are automatic. That is, the tacks are taken from a hopper and are held and driven by machine in rapid succession. Tacks intended for such purposes are called machine tacks and their requirements as to finish and uniformity are stricter than for hand tacks.

Producing the Final Finish

Machine tacks are placed in cast iron tumblers similar to the one shown in Fig. 2 and are tumbled for many hours, frequently for a full day, before they are packed for shipping. Sometimes coating materials are introduced into these tumblers and sometimes pieces of lead are tumbled with the tacks to help in producing a smooth finish. After tumbling it is not uncommon practice to coat the tacks with enamel. This is done by introducing the tacks into large revolving wooden vats containing the enamel solution. From here the tacks pass to revolving cast iron barrels which are heated and which not only dry the coating of enamel, but bake it on to the tacks as they are tumbled about inside.

Where requirements are exceedingly rigid, tacks are assorted according to size of head and length. Various styles of machines have been devised for this purpose. Some are highly ingenious, taking tacks automatically from a hopper and sliding them head up along open slots which allow different sizes to drop through at different places. Most tacks are distributed to the trade in boxes of various sizes, therefore, it is necessary to take the bulk supply and weigh out various sized lots to fill the different sized boxes demanded by the trade. Usually this is a hand operation performed by girls who become expert at weighing and filling the small cardboard boxes. The small boxes are packed in large wooden boxes and then are ready for shipping.

For certain uses, principally fastening heels on shoes, headless tacks are used. When this type of tack is being made the header attachment on the machine, of course, is unnecessary. In catering to this trade tack machine manufacturers discovered that leaving off the entire mechanism for making the heads the cutting operation became so simple that it could be easily turned back and forth through a slight angle, thus avoiding the necessity of turning the strip back and forth through 180 degrees. Such a machine, called a vibrator, is shown in Fig. 5. The cutting knives are mounted in a rotating frame and may be seen clearly.

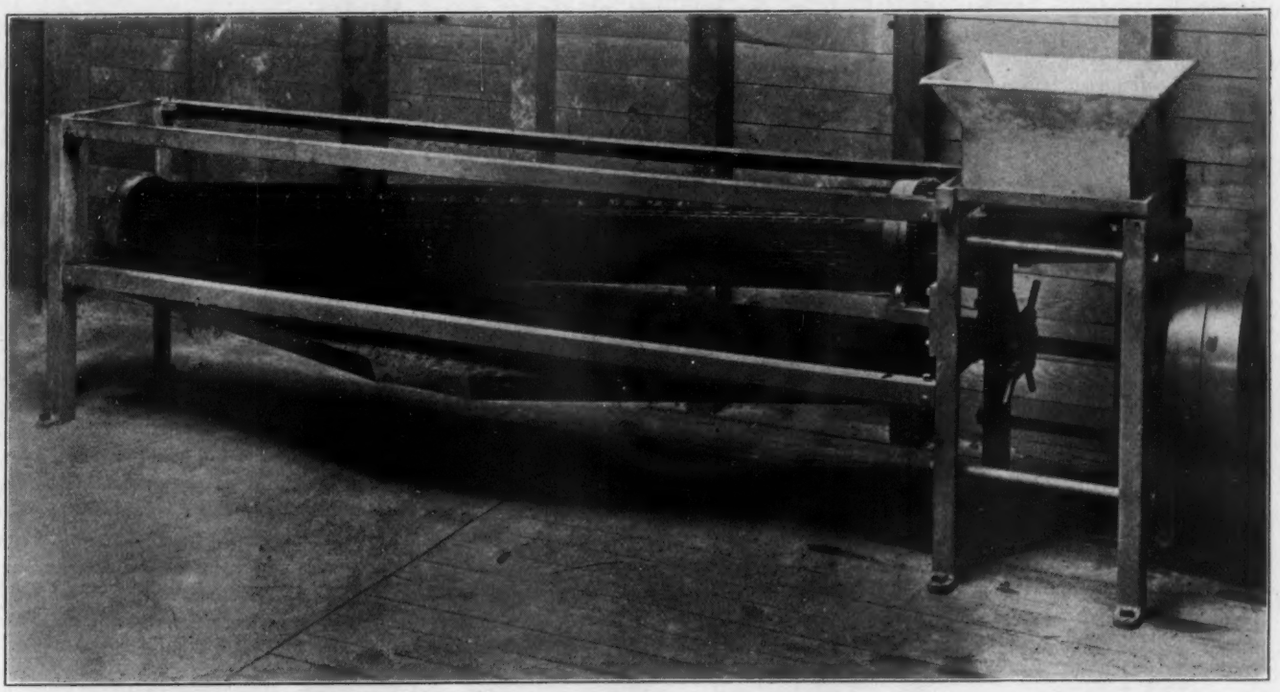


FIG. 7—TACKS ARE CLEANED OF SLIVERS AND OTHER FOREIGN MATERIAL BY RUNNING THEM THROUGH REVOLVING SCREENS CALLED SIFTERS. ONE OF THESE MACHINES IS SHOWN IN THIS ILLUSTRATION

According to the bureau of standards, Washington, industries which are engaged in the manufacture of metal products are finding an aid in a method of spectral analysis developed by the spectroscopy section of the bureau. This system is claimed to offer a more convenient and rapid means for detecting impurities in metals than chemical methods.

Large Uses of Steel In Small Ways

ONE of the innumerable uses to which steel is adapted and which doubtlessly escapes the thought of the average layman, is that for hypodermic needles. Steel tubing for this purpose is produced in this country with the opening too small for the naked eye to detect. Raw material used for small diameter tubing usually is in the form of hot-rolled hollow billets of high-carbon steel. Welded tubing, however, has been used successfully. While the tonnage of steel used in the manufacture of hypodermic needle tubing approximates 15 tons annually, the tonnage involved in the production of other surgical instruments, which require an aperture throughout the entire length of the tube, probably surpasses 100 tons.

Reduction of the diameter of the wall thickness and of the opening is accomplished by cold drawing and from the hot-rolled size down to the size of hypodermic tubing entails 60 to 70 cold passes. No matter to what extent the cross section of the tubing is reduced an opening persists.

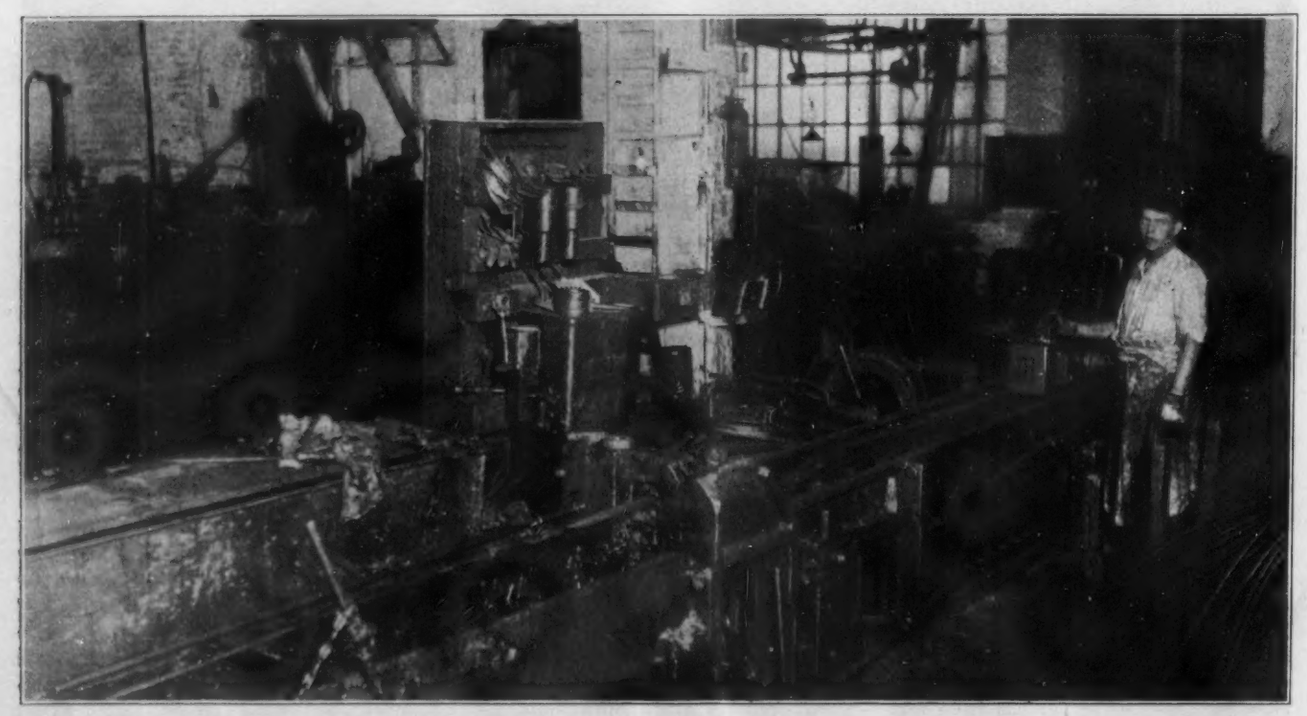
The draw bench, by means of which the tubing is drawn, is equipped with a chain that passes over an idler sprocket at the front of the machine and a motor-driven sprocket at the rear. The sprocket chain operates continuously and is driven through compound gearing The front end of the machine rises to form a head in which the dies are held. A carriage mounted on wheels immediately above the chain is equipped with a hook, which, when inserted between the links, causes the carriage to be drawn toward the rear of the machine. Attached to the front end of the carriage is a pair of jaws which grips the end of the tube and pulls it through the dies.

The inside diameter of the tube is controlled during the drawing operation by a mandrel slightly smaller in diameter than the tube to be drawn. This mandrel forms one end of a steel bar; the opposite end of the mandrel bar is secured to a cross bar which is free to slide toward the front or rear for a distance of about 6 inches over bolts rigidly held in the standards of a bench.

To permit projection through the die so that it may be gripped by the tongs, one end of the tube is swaged or broken down. After the mandrel bar has been inserted in the tube the reduced end is passed through the die and gripped by the carriage tongs. The hook at the rear of the carriage is lowered into one of the links of the continuous running chain and the tube is drawn through the die which is flushed with a lubricant. The drawing operation reduces the diam-

Hypodermic Needles

THIS is the ninth of a series of articles dealing with some of the thousands of obscure uses of steel which in the aggregate go a long way toward absorbing the great American tonnage, and in proclaiming steel the universal metal. The first article on "Corsets" appeared Nov. 22. Other articles were "Pins," Dec. 6; "Pens," Dec. 20; "Cotton Ties," Jan. 17; "Steel Wool," Jan. 31; "Toys," Feb. 14; "License Plates," Feb. 28, and "Spinning Rings and Travelers," March 13.



DRAW BENCH USED FOR REDUCING TUBING TO SMALL DIAMETER PRIOR TO SUBSEQUENT REDUCTION THROUGH WIRE-DRAWING DIES TO HYPODERMIC NEEDLE SIZE

eter of the opening and the wall thickness of the tube and increases its length.

Upon completion of the drawing operation the tube is annealed to remove hardness, after which it is pickled and washed before being subjected to subsequent drawing. In the annealing operation numerous small tubes are packed inside a pipe of 8 to 10 inches diameter, which after being capped at both ends to exclude air, is placed in the annealing furnace and left there until the enclosed tubes are rendered sufficiently soft for the next draw. Each anneal permits the diameter of the tube to be reduced approximately 25 per cent.

Usually hot-rolled tubing for hypodermic needles and other surgical instruments with a hole through the entire length is about ½-inch diameter and is drawn to about ⅜-inch diameter before resorting to the first anneal. The tube is drawn and annealed repeatedly until its diameter is reduced to the size of a small wire and from then the practice is to effect the successive reductions by methods commonly employed in drawing wire. The diameter of the opening is reduced approximately in the same ratio as the outside diameter of the tube and while the opening may be slightly irregular, in cross section the tube is uniform. The foregoing methods afford drawing a tube to 1/16-inch diameter, having an opening of 0.020-inch uniform diameter throughout its entire length.

British Machinery Business Slumping

ALTHOUGH Germany, France, Belgium, Switzerland and a number of other countries once furnished machinery for the world's commerce and occupied positions of importance, a situation now has been reached where the bulk of the international trade is largely divided between British and American manufacturers. This statement appears in a circular, "The Machinery Situation in the United Kingdom," prepared by W. H. Rastall, chief of the industrial machinery division of the department of commerce, Washington.

Because British manufacturers occupy such an important position as exporters of machinery, there is a tendency to overlook the large volume of machinery exported from the United States to the United Kingdom and this applies to a wide range of machinery. Even in prewar years these exports were heavy. In 1910 the United Kingdom ranked third among all the foreign markets for American machinery, absorbing more than $4,500,000 worth of American equipment.

By 1913 the United Kingdom occupied second position, consuming more than $10,400,000 worth of such machinery. During the war period this trade became unusually heavy but even in 1922 the United Kingdom still ranked second in importance, receiving $12,791,732 worth of American machinery. Generally speaking, the machinery exported from the United States to the United Kingdom represents the better classes of equipment, such as machine tools used either for large production or precision work, labor saving equipment, or any one of a great variety of specialties.

The volume of machinery imports of the United Kingdom is large, being for 1922 about $21,500,000 for strictly industrial machinery. But, although this machinery is drawn from a great variety of sources, the United States occupies an exceedingly important position in this trade, furnishing nearly two-thirds of these imports. The 1922 machinery imports of the United Kingdom were divided as follows: United States, 65.5; France, 19; Germany, 6.5; Sweden, 4.0; and all other countries, 5.0 per cent.

On the other hand, there is a demand in the United States for British industrial machinery although this trade is much smaller than that employed in the opposite direction. In 1913 it amounted to about $1,700,000; in 1922, it amounted to about $3,669,000, and represents to a large extent special textile machinery, although a number of other kinds of equipment are employed.

A certain amount of the machinery that is reported as being imported into the United Kingdom is re-exported but this trade is much smaller than formerly. In 1913 re-exports amounted to about 35 per cent while in 1922, it would appear that the re-exports were only about 15 per cent. Changing labor conditions and other conditions in the United Kingdom are encouraging manufacturers there to clear their stocks for better classes of machinery, attention being given particularly to labor saving machinery. Conditions in the United Kingdom are becoming more and more like those in the United States, making the employment of our types of machinery more desirable.

The British statistics also furnish some interesting particulars in connection with the study of British machinery as a competitor for export from the United States. Since at the time of the armistice the machinery export trade of the United States was greatly expanded over the prewar volume, it was expected that there would be a contraction in this trade. Contrasted with this, the British export trade in machinery was abnormally low and a certain expansion was to be anticipated. Since that time it has been interesting to observe the fluctuations in these two trades. It is practically impossible to determine what might be the normal ratio in the volume of the two countries. A study of this character is complicated somewhat because textile machinery occupies such a prominent position in the British trade. In British colonies the tendency is to favor British machinery regardless of quality and price. The accompanying table illustrates British experience in this connection.

American manufacturers are interested in the export of British machinery other than that used in the manufacture of textiles to countries outside the British Empire, and from the table it will be noted that although this trade in 1913 approximated £10,709,000 and rose in 1920 to £26,700,000, it has now declined to about £9,800,000. If statistics were available expressing this trade in tons rather than money values, a great contraction would be indicated as present prices are far above the prewar level. This is a marked contrast with the experience of the United States where our

Exports of British Machinery

	Textile				Non-textile			
	Foreign countries		British Empire		Foreign countries		British Empire	
Years	£	Per cent	£	Per cent	£	Per cent	£	Per cent
1913....	6,006,155	22.5	2,275,693	8.5	10,709,165	40.2	7,675,723	28.8
1919....	5,559,410	20.1	2,567,838	10.4	10,881,003	39.4	8,317,406	30.1
1920....	6,416,762	11.6	2,732,001	5.0	26,718,533	48.4	19,299,672	35.0
1921....	15,488,316	23.3	9,624,568	14.5	19,436,150	29.2	21,932,800	33.0
1922....	12,744,809	29.7	8,704,331	20.2	9,806,892	22.8	11,711,683	27.3

total industrial machinery exports expanded from about $88,000,000 in 1913 to $112,000,000 in 1922, although this latter year's record was a serious decline from the $208,000,000 of 1921. This ratio compares more or less with that representing British exports to the other parts of the empire.

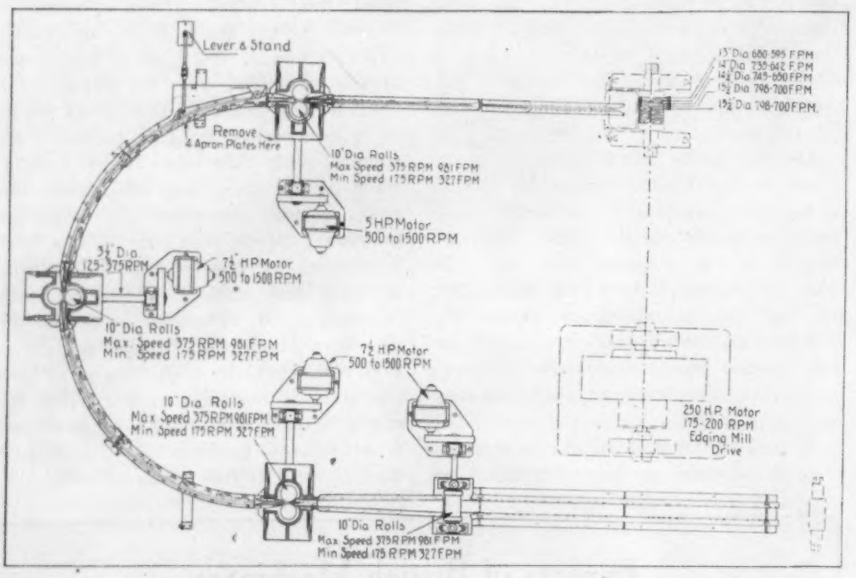
It is also well to remember the great importance of the British exports of textile machinery which in 1912 accounted for nearly 50 per cent of the total British machinery export trade. Even in 1913, these exports accounted for 31 per cent of the total business.

The British machinery industry now finds itself confronted with a rather serious situation. It is normally recognized there that the engineering industry is dependent on foreign markets for about 50 per cent of this business, which may be contrasted with an export ratio of about 20 per cent in the United States. In prewar times a large percentage of this equipment went to continental Europe, but conditions in Russia, Poland, Germany and some of the other European countries have had an adverse effect on this trade for some time to come. Since the armistice, the textile machinery export trade has been flourishing but conditions now have been reached where supply has caught up with demand and orders will be solicited earnestly during the current year.

The American Hardware Corp., New Britain, Conn., for 1923 reports net profit of $2,724,353 after depreciation and reserves, compared with $2,266,269 in 1922. After dividends there was a surplus of $244,353, compared with $827,869 in the preceding year.

Repeater Transfers Hot Strip on Edge

New development in rolling mill equipment includes a hot mill repeater for the continuous passage of hot rolled strip steel between two mills not in line. Various transfer conditions can be accomplished including the passage of the steel from a flat mill to an edging mill, from an edging mill to a flat mill and from one flat mill to another. Metal is propelled around a trough or track by vertical feed rolls, the number required and the type of drive depending upon conditions. While in transit between mills the strip travels on edge, it being turned in this position by a twist guide located near the delivery side of the flat mill.


Lever & Stand
Remove 4 Apron Plates Here
10" Dia. Rolls Max Speed 375 RPM 981 FPM Min Speed 175 RPM 327 FPM
5 HP Motor 500 to 1500 RPM
3½" Dia. 125-375 RPM
7½ HP Motor 500 to 1500 RPM
10" Dia. Rolls Max Speed 375 RPM 981 FPM Min Speed 175 RPM 327 FPM
7½ HP Motor 500 to 1500 RPM
10" Dia. Rolls Max Speed 375 RPM 981 FPM Min Speed 175 RPM 327 FPM
250 H.P. Motor 175-200 RPM Edging Mill Drive
10" Dia. Rolls Max Speed 375 RPM 981 FPM Min Speed 175 RPM 327 FPM
13" Dia. 680-595 FPM
14" Dia. 735-642 FPM
14½" Dia. 765-650 FPM
15½ Dia. 798-700 FPM
15½ Dia. 798-700 FPM

PLAN OF A FLYNN-TYPE REPEATER USED FOR TRANSFERRING HOT STRIP FROM AN EDGING MILL TO A FLAT PASS ON A 10-INCH INSTALLATION

The strip again is returned to its flat position by a twist guide located in the path of travel in close proximity to the exit side of the last stand of vertical feed rolls. The vertical feed rolls are designed with one positive driven roll and one friction-driven roll. The former is driven through reduction gears by a 7½-horsepower motor which operates from 500 to 1500 revolutions per minute. The friction roll is driven by the contact of the collars turned on the rolls when no metal is passing between; when steel is in transit, however, the friction roll is driven by contact with the metal together with the power driven roll.

With this type of friction drive any distance between the working surface of the rolls can be obtained by increasing or decreasing the diameter of the collars on the rolls so as to permit bars of various thickness to be entered readily. The friction roll is held in contact with the driven roll by coil springs. Compression on these springs is adjusted by screws. A large percentage of slippage can take place between the feed rolls which do not require a close foot speed adjustment with the hot strip mills. The vertical feed rolls shown in the accompanying layout are 10 inches in diameter and operate at a maximum speed of 375 to 981 feet per minute and at a minimum speed of 175 to 327 feet per minute. A set of horizontal feed rolls are installed a few feet from the strip mill. These are of the same design as the vertical feed rolls, their purpose being to hold the metal after it passes through the stand of vertical feed rolls equipped with the twist guide. The trough or track is made of any suitable material and is designed to suit the sizes to be rolled. The trough is provided with a gate through which the metal can be run out in case of an accident or cobble in the mills. The advantages associated with this type repeater are low maintenance costs, absence of manual labor, increased tonnage and flexibility. The repeater is the design of Frank E. Flynn, assistant manager, strip steel department, Weirton Steel Co., Weirton, W. Va.

Aluminum Use Increases, Production Rises

Production of new aluminum in the United States in 1923 was double that of 1922, expressed in its value, according to a statement by the department of the interior. Its price varied from 22 cents in January to 27 cents from April to the end of the year for the 99 per cent grade, with the 98 per cent grade a cent lower. Use by the automotive industry was responsible for much of the increase, as it is estimated 25 per cent of the domestic production is used in this way. This outlet consumes 72,700,000 pounds in 1922.

Imports in 1923 were 45,002,623 pounds, of which 43,000,000 were crude metal, scrap and alloy. Exports in 1923 were 10,978,106 pounds, compared with 8,891,969 pounds in 1922. The 1923 total was made up of 1,169,753 pounds of ingots, scrap and alloys, 4,369,918 pounds of plates, sheets, bars, strips and rods, 442,370 pounds of tubes, moldings and castings, 1,175,659 pounds of table and hospital utensils, and 3,820,406 pounds of miscellaneous manufactures.

An interesting development of the year was the advance in silicon-aluminum alloys. Heretofore silica has been removed wherever possible but use of the new alloys indicates possibility of using bauxite of a lower grade than formerly.

R. S. McManus Steel Construction Co., Buffalo, N. Y., has increased its capital stock from $25,000 to $50,000.

Societies News

A PRELIMINARY program of the spring meeting of the American Society of Mechanical Engineers at Cleveland, May 26-29 has just been announced by the society. Among the features of the program will be the first formal presentation of developments on the mercury vapor process for steam generation by the inventor, W. L. R. Emmet. "Properties of Materials at High and Low Temperatures" will be considered at a joint session with the American Society for Testing Materials. The machine shop practice committee will hold two sessions at one of which A. L. DeLeeuw will present a paper "Analysis of a Machine Shop Problem on a Quantity and Final Basis." Other subjects to be discussed will be power problems of the steel industry, handling materials in industrial plants and management problems.

* * *

Describes Use of X-Rays

An address entitled "X-rays and Metal" was presented by Dr. Ancel St. John at the regular monthly meeting of the New York chapter of the American Society for Steel Treating held in the Woolworth building, New York, March 19. Dr. St. John is affiliated with the Union Carbide & Carbon Research Laboratories Inc., Brooklyn, N. Y.

* * *

Heat Treating Ball Bearings

L. A. Lanning of the New Departure Mfg. Co., Bristol, Conn., addressed the Worcester, Mass., chapter of the American Society for Steel Treating March 20 on "Quality Heat Treating as Carried Out in the Ball Bearing Industry." Mr. Lanning illustrated his talk with lantern slides, showing micrographs of the work after the various treatments.

* * *

Casting Cleaning Described

Before a large gathering of members and guests of the Pittsburgh Foundrymen's association on March 17. Carl B. Lockhart explained some of the modern methods of cleaning castings as developed and adopted at the plants of the General Electric Co. Mr. Lockhart is connected with the Erie works of that company. The occasion was the March meeting and dinner of the local foundrymen's organization at the General Forbes hotel.

* * *

To Hold Refractory Discussion

A round table discussion on "Refractories for Electric Furnaces" promises to be one of the important features of the spring meeting of the American Electrochemical society which will be held at the Bellevue-Stratford hotel, Philadelphia, April 24-26. The introductory talk will be made by Dr. Alfred Stansfield, of McGill university, Montreal. The discussion proper will be from the viewpoints of the furnace operator, the furnace builder and the refractory manufacturer.

* * *

Organize Tri-City Council

Plans are completed for the organization of the Tri-City Technical council, an association of technical societies in the Tri-Cities. The organizations represented are the Illinois-Iowa section of the American Chemical society, Tri-Cities section of the American Society of Mechanical Engineers, Tri-City chapter of the American Society for Steel Treating, Davenport Engineers club and the Quad-City Foundrymen's association. One of the purposes of the organization is to increase the civic activities of the technical men and organizations. The following temporary officers have been selected: Chairman, H. Bornstein, Deere & Co., Moline, Ill.; vice chairman, Howard Rogers, Williams-White Co., Moline, Ill.; secretary-treasurer, Harvey Soverhill, Davenport Locomotive Works, Davenport, Iowa.

* * *

Heads John Fritz Medal Board Award

Charles F. Rand, New York, chairman of the Engineering Foundation has been elected chairman of the John Fritz Medal board of award and Fred J. Miller, New York, past president of the American Society of Mechanical Engineers has been selected as the new secretary. The four large engineering societies have representatives on the board as follows: American Society of Civil Engineers, A. P. Davis, George S. Weber, John R. Freeman, C. F. Loweth; American Institute of Mining and Metallurgical Engineers, Herbert Hoover, B. B. Thayer, A. F. Dwight, Charles F. Rand; American Society of Mechanical Engineers, W. M. McFarland, W. F. M. Goss, F. J. Miller, Henry B. Sargent; American Institute of Electrical Engineers, A. W. Berresford, Frank B. Jewett, William McClellan, F. J. Ryan. The John Fritz Gold Medal, established in 1902 in honor of John Fritz, pioneer in the American iron and steel industry, is awarded annually for notable scientific or industrial achievement and is the highest honor bestowed by the engineering profession in this country

Plants Run Separately

The recent consolidation of the Pennsylvania Tank Car Co. and the Pennsylvania Car Co. both of Sharon, Pa., under the title of the latter corporation, has had no bearing upon the organization or operations of the Petroleum Iron Works Co. also of Sharon, according to the officials of the company. All the plants are located physically together at Sharon and while the Pennsylvania Car Co. and the Petroleum Iron Works Co. are related, they are separate and distinct organizations operating as such and neither is subsidiary to the other. They are known as associated companies.

Convention Calendar

April 1-3—American Association of Oil Burner Manufacturers. First annual meeting, Hotel Chase, St. Louis. Leod D. Becker, 518 Bank of Galesburg building, Galesburg, Ill., is secretary.

April 2-3—Association of Iron and Steel Electrical Engineers, combustion engineering section, William Penn hotel, Pittsburgh. John F. Kelly, 513 Empire building, Pittsburgh, is secretary.

April 23-24—National Metal Trades association. Annual convention at the Hotel Astor, New York. Louis W. Fischer, Peoples Gas building, Chicago, is secretary.

April 24-26—American Electrochemical society. Spring meeting, Bellevue-Stratford hotel, Philadelphia, Dr. Collin G. Fink, Columbia university, New York, is secretary.

April 28-30—American Gear Manufacturers' association. Spring meeting, Lafayette hotel, Buffalo. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

April 30-May 2—Society of Industrial Engineers—Annual convention at Buffalo. George C. Dent, 608 South Dearborn street, Chicago, is secretary.

May 5-10—Sheet Steel Executives. Second annual convention under auspices of National Association of Sheet and Tin Plate Manufacturers, Hotel Greenbrier, White Sulphur Springs, W. Va. W. S. Horner, 1832 Oliver building, Pittsburgh, is chairman.

May 8-9—British Iron and Steel institute. Annual meeting at the Institution of Civil Engineers, London. G. C. Lloyd, 28 Victoria street, London, is secretary.

May 19-21—Southern Supply and Machinery Dealers' association, National Supply and Machinery Dealers' association, and American Supply and Machinery Manufacturers' association—Triple convention at Hotel Cleveland, Cleveland. Alvin M. Smith, Smith-Courtney Co., Richmond, Va.; T. James Fernley, 505 Arch street, Philadelphia; and F. D. Mitchell, 1819 Broadway, New York, are the secretaries respectively.

May 20-23—National Association of Purchasing Agents. Annual convention, Mechanics Hall, Boston. W. L. Chandler, 19 Park place, New York, is secretary.

May 22-23—American Society for Steel Treating. Spring sectional meeting, LeClaire hotel, Moline, Ill. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

May 22-23—National Pipe and Supply association. Annual meeting, Hotel Cleveland. George L. McIlvane, 909 Oliver building, Pittsburgh, is secretary.

May 26-29—American Society of Mechanical Engineers—Spring meeting Hotel Cleveland, Cleveland. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

A W. FELKER, recently connected with the Braeburn Alloy Steel Corp., Braeburn, Pa., as Detroit district manager, formerly was representative there for the Crucible Steel Co. of America. Mr. Felker was at one time located at Pittsburgh and later at Cleveland for the Crucible company.

Charles O. Swan has joined the Braeburn organization as sales representative in the Ohio territory with headquarters in Cleveland.

M. W. Caruthers, who has been made a representative of the Braeburn corporation in the Pittsburgh territory, formerly was connected with the Chicago district sales division of the Crucible Steel Co. of America.

* * *

Mrs. Nellie Lowry has been elected president of the Marting Iron & Steel Co., Ironton, O., to succeed her husband, the late Dr. A. Clark Lowry.

* * *

Austin T. Hunt, sales manager of the Senaca Iron & Steel Co., Buffalo, N. Y., has recovered completely from his recent illness and again has taken up his duties.

* * *

Charles H. Last, recently made sales representative at Cleveland of the Morgan Engineering Co., Alliance, O., formerly was connected with the Manhattan Construction Co., Cleveland.

* * *

Harold Hemenway plant manager of the works at Beloit, Wis., of the Wanner Malleable Castings Co., Hammond, Ind., has resigned from that company effective as of March 22, to devote his time to other interests.

* * *

Niven McConnell, superintendent and general manager of the works of the Forged Steel Wheel Co., Butler, Pa., has resigned, effective March 15, after a 15-year affiliation. He is succeeded by Jack Mellon.

* * *

Robert Armory of Boston and Guy O. Hunter of New York have been added to the board of directors of the Saco-Lowell Shops, Boston, machinist and founder and builder of machinery.

* * *

Ralph Blaisdell, formerly connected with the railroad administration in Washington in an administrative capacity, has been elected treasurer of the Wickwire-Spencer Steel Corp. Mr. Blaisdell succeeds A. D. Berning who has held the office since Jan. 1.

* * *

M. J. Alexander, Pittsburgh, president for many years of the Pittsburgh Valve & Fittings Co., has disposed of his interests in that company to business associates of the Pitcairn Co., Philadelphia. Ill health prompted his retirement.

Clarence Brown, of the Pitcairn company is the new president of the Pittsburgh company and C. L. Selkregg, Barberton, O., remains as vice president.

* * *

A. Burton Miles, formerly connected with the Philadelphia office of the Brier Hill Steel Co., has been appointed Philadelphia representative for the Apollo Steel Co., Apollo, Pa., to succeed Howard M. Davis who is retiring effective April 1. Mr. Davis will move to Pasadena, Cal.

* * *

Baltzar de Mare, Drexel building, Philadelphia, has been appointed eastern representative for the Vulcan Furnace & Equipment Co. and the Standard Basic Brick Co. He is consulting metallurgist and engineer, specializing in the manufacture of steel by the open-hearth and electric furnace process. The Vulcan Furnace & Equipment Co. builds open-hearth furnaces and slag equipment.

* * *

E. J. Kearney, secretary and treasurer of Kearney & Trecker Corp., Milwaukee manufacturer of machinery, has retired as president of the American National bank, Milwaukee to become chairman of the board. He is succeeded as president by John D. Bird, for 14 years general manager of the Milwaukee works of the Worthington Pump & Machinery Co., who retired Sept. 1.

* * *

R. P. Hudson, recently connected with the coal and coke department of the American Rolling Mill Co. at Nellis, W. Va., as a coal inspector, formerly was assistant to Dana J. Demorest, professor of metallurgical engineering at Ohio State university, Columbus, O. The coal inspection department is a new branch of the American Rolling Mill Co. and is headed by R. H. Sweetser, assistant to the vice president.

* * *

Hearne E. Neely, who for the past several years has been sales manager of Johnson-Peter Co., Pittsburgh, distributor of boiler tubes and steel tubing, now is general manager of the New York branch of this company, located at Bush Terminal building, Brooklyn, N. Y. The Johnson-Peter Co. is eastern representative of Tyler Tube & Pipe Co., of Washington, Pa.

* * *

J. Clyde Campbell, employment manager at East Youngstown of the Youngstown Sheet & Tube Co. has been named management representative of the company in charge of employment, industrial relations, labor camps, etc. He takes the place of Roy M. Welch named a year ago as secretary to President J. A. Campbell. Carl M. Ott was made employment manager.

* * *

Samuel Weiss, recently made representative at Cleveland of the Ashland By-Products Coke Co., formerly was connected with the Semet-Solvay Co. in the Detroit territory. He was succeeded by Robert H. Watson, former superintendent of the blast furnace of the Ford Motor Co. Mr. Watson previously was connected with the Detroit plant of the M. A. Hanna Co. Mr. Watson was graduated from Harvard school of mines and metallurgy in 1901.

* * *

W. D. Moore, recently elected president of the American Cast Iron Pipe Co., Birmingham, has been connected with the company for 15 years. When John J. Eagan, Atlanta, was made president in 1922, Mr. Moore became vice president and works manager. Mr. Eagan has been seriously ill for some time and his forced absence caused his resignation and Mr. Moore's election. Mr. Eagan continues with the company as advisory director. Mr. Moore came to Birmingham from Galion, O., in 1907 and for a brief time was connected with the Tennessee Coal, Iron & Railroad Co. in Ensley, Ala. He joined the American Cast Iron Pipe Co. in 1908.

South St. Louis Blast Furnace Is Leased

St. Louis, March 25.—Negotiations have been completed for the leasing of the 350-ton blast furnace of the Mississippi Valley Iron Co., located in South St. Louis, by the St. Louis Coke & Iron Co., whose main plant is in Granite City, Ill. This acquisition will give the latter company a daily output of 850 tons, its East Side plant having a capacity of 500 tons. The blast furnace of the Mississippi company has been idle for several years, and the leasing interest has availed itself of the opportunity to repair and reline its main furnace by utilizing the South Side plant. The Granite City furnace has been in continuous blast since Feb. 8, 1921. The company will be able to use its surplus coke in operating the additional furnace.

The St. Louis Coke & Iron Co., which is the leading producer of iron in this district, contemplates extensive additions to its equipment, including an additional blast furnace unit. It has a battery of 80 Roberts ovens, in which coal from the adjacent Illinois fields is coked. The company will blow out its Granite City furnace at the end of March. At the annual meeting held last week, William G. Maguire was re-elected president of the company, as were all other officers and directors. Edward F. Goltra, national democratic committeeman from Missouri, is president of the Mississippi Valley Iron Co.

Tin Plate Helper Once; Now Royal Treasurer

One of Premier Ramsay MacDonald's recent appointments has aroused much interest in the tin plate industry in this country, as well as in Great Britain. Newspaper reports from London under date of Jan. 24 announced that Tom Griffiths, member of parliament for Pontypool, had been appointed to the post of treasurer of the royal household.

Thomas Williams, general manager of the Pontypool Tin Plate Works of Partridge, Jones & John Paton, Ltd., in a letter to Hollinshead N. Taylor, president of N. & G. Taylor Co., Philadelphia, tin plate manufacturer, states that Griffiths started as a boy at the Melyn Works, Neath, Wales, at a wage of 4 pence a day. He rose to the position of roller and afterward became an organizer for the British steel smelters' union. He was a divisional officer of the Iron and Steel Trades confederation before entering parliament in 1918.

Under the British tables of precedency Griffiths in his new post would outrank at public functions all baronets, sons of viscounts and barons, younger sons of earls, many knights of the garter, most knights of other orders, the lord chief justice and the chancellor of the exchequer.

Makes Much Soil Pipe

That Anniston, Ala., is the greatest producer of soil pipe in the world is the claim of the *Anniston Star* in a special industrial edition issued March 6. The statistics presented are the basis for claims that while Alabama produces more than half the tonnage of soil pipe made in America, Anniston produces 75 per cent of the state's total; this tonnage is valued at $20,000,000; eleven plants employ 3000 men. Anniston also has two pressure pipe foundries.

Figures for 1922 show that total production of soil pipe in the United States was 356,000 tons, of which four southern states produced 228,000 tons. Anniston made 180,000 tons of this total. The pressure pipe plants produce about 100,000 tons per year.

Furnaces Dismantled

The Thomas Iron Co., Reading, Pa., recently sold its two Lock Ridge blast furnaces at Alburtis, Pa., to W. B. Butz & Sons of Alburtis. The furnaces have been abandoned and will be dismantled for scrap. No. 7 was built in 1867 and No. 8 in 1869, both being on stone lined with a steel shell. Their annual capacity was 42,000 tons of foundry and forge iron although they have been inactive in recent years. The two Hokendauqua furnaces at Hokendauqua, Pa., are the only furnaces now owned by the Thomas Iron Co. the Saucon furnace at Hellertown, Pa., having been sold for scrap a few days ago.

Obituaries

DR. THOMAS CORWIN MENDENHALL, internationally renowned as an educator and scientist, died at his home in Ravenna, O., March 22 at the age of 82 years. Dr. Mendenhall in 1889 was superintendent of the coast and geodetic survey, superintendent of weights and measures and member of the United States lighthouse board. He served on several governmental commissions. In 1900 he won a gold medal at the Paris exposition for studies on electricity. He belonged to many societies of scientific and honorary nature. Dr. Mendenhall was a member of the first faculty of Ohio State university, Columbus, O., and at the time of his death was chairman of the board of trustees of that institution. In an educational way Dr. Mendenhall was graduated from Rose Polytechnic institute, Terre Haute, Ind., as a doctor of science. He was made an honorary doctor of philosophy by Ohio State university and a doctor of laws by Western Reserve university and the University of Michigan. He served later as president of Rose Polytechnic and Worcester Polytechnic and also professor of physics at the Imperial university of Japan, Tokio.

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M. C. Reed, head of the Metal & Iron Construction Co., Barnesville, O., died at his home recently aged 60 years.

* * *

Elijah H. Phelps, for many years president of E. H. Phelps Co., Merritton, Ont., manufacturer of wheels and shafts, died March 18 at the age of 83 years at his home in that city.

* * *

Ralph A. Metzger, assistant sales manager of the Reeves Mfg. Co., New Philadelphia, O., stove pipe manufacturer, died recently at his home there at the age of 41 years.

* * *

Charles Phillips, general manager and director in the Stewart Furnace Co., died March 22 at Atlantic City. He was 60 years old and for 40 years had been connected with the Stewart company. He was a director of the Sharon Railway Co., president of the Union Limestone Co. and prominent in Masonic circles. His widow was a daughter of the late Samuel McClure, for many years with the Stewart company.

* * *

H. D. Megary managing director of the Consolidated Pneumatic Tool Co., London, England, died March 20. Mr. Megary was born in Philadelphia, April 21, 1888, and was graduated from the University of Pennsylvania in 1909. He was with the Bethlehem Steel Co. until June 1918, when he became connected with the Chicago Pneumatic Tool Co. as assistant to the president, later being made secretary of the company. In 1921 he was transferred to London to assume the duties of managing director of the English company.

Trust Suit Filed Against General Electric Co.

Conspiracy to fix retail prices of incandescent electric lamps, in violation of the Sherman antitrust law, is charged by the United States government in a suit filed last week against the General Electric Co., the Westinghouse Electric & Mfg. Co., and the Westinghouse Lamp Co. It is claimed that through a system of agency contracts, purporting to keep its title to the lamps after they are sent to the retailers for sale to consumers, the General Electric Co. attempts to evade the Sherman law. The company is alleged to hold control over the output of the Westinghouse companies through contracts permitting the use of General Electric patents.

The trade in lamps by the General Electric Co. is said to amount to about $50,000,000 a year. Further, it is stated, in 1921 the General Electric did 71.9 per cent of the business in the United States; Westinghouse companies 16.5 per cent; licensees 8.8 per cent, and "independents" 2.8 per cent. The suit was filed by the government in federal court at Cleveland, where large electric lamp manufacturing plants are located.

Fix Alloy Differential

Following establishment of a uniform trade practice of quoting round-cornered alloy steel squares on the bar base, an effort now is being made to establish regular differentials for larger sizes. Some makers are now using these differentials, but they have not yet been generally adopted. It is provided that round cornered squares 4 inches, up to but not including 6 inches, are ¼ cent per pound less than the bar price and that billets 6 inches and over are $5 per gross ton less than the net ton price of bars. Thus bars at 4.00c per pound would be $80 per net ton and billets of the same alloy would be $75 per gross ton. General adoption of this plan of differential is expected.

Recommends Unification in Labor Statistics

A plan for co-ordination of the work of compiling employment statistics in the United States is submitted to the American Statistical association in the report of its commitee on governmental labor statistics. The committee was appointed to co-operate with the committee on the business cycle appointed by Secretary Hoover following the President's conference on unemployment. Its report suggests means for improving the federal system of obtaining labor data, and one of its principal features is the recommendation that the United States employment service cease to duplicate the work of the federal bureau of labor statistics.

As between the states and the federal government the committee puts the initial responsibility for the collection of employment statistics upon each state.

The committee states that it recognizes the need which the United States employment service is seeking to meet by collecting data in specified localities for the use of labor exchanges and other purposes, but adds "we believe this need can better be met by so equipping the federal bureau of labor statistics as to enable it to collect and publish the data for these localities. Otherwise business establishments will inevitably be burdened with requests for the same reports to be made to different agencies of the government." The committee also suggests means for avoiding the duplication of work by some state agencies and federal reserve banks.

Dudley Endows Chair

Plimmon H. Dudley, for 40 years in charge of rail, tire and structural steel equipment of the New York Central railroad, who died recently, has endowed with $100,000 a chair in railroad engineering at Yale university, his will just filed revealing the gift. His entire estate, totaling close to that sum, was given the university. To the New York Central railroad he bequeathed his stremmatograph, an instrument he had invented to detect defects in steel rails. None of his inventions was patented.

To Use More Barges

Birmingham, Ala., March 24.—Looking forward to heavy shipments of iron and steel products down the Warrior river to Mobile and New Orleans ports for export, the Tennessee Coal, Iron & Railroad Co. will have built at once 20 steel barges. Barges heretofore used for hauling coal are practically obsolete. The movement of iron and steel is growing and the need for more equipment has been apparent for some time. Last year the Tennessee company had built nine steel barges for the river service.

Detroit Employment Gains

Detroit, March 25.—A gain of 730 was made in industrial employment in this city last week, the total reported by the Employers' association being 241,215.

National Foreign Trade Rally Announced

The national foreign trade convention will be held in Boston June 4, 5 and 6, the first time in New England, the birthplace of American industry. The central theme will be "Our Need for Wider Markets." This also is the first time that a session specially devoted to the interests of importers has been included in the program. It will be held in co-operation with the National Council of American Importers and Traders.

In issuing the call for the convention James A. Farrell, president of the United States Steel Corp., and chairman of the national foreign trade council, has invited all chambers of commerce, boards of trade, national and state associations, and other industrial and commercial organizations, to be represented.

A series of six minute talks by representatives of various industries on their need for foreign trade and the most promising markets for increasing sales efforts will be a feature of the first general session, June 4. The second general session June 5 will have a report on world trade conditions by a special committee of the foreign trade council. Special attention has been given to the so-called "new" or non-European markets. Another special committee will report on a proposed American foreign trade policy. Group sessions will be held daily. Speakers have not been announced. A trade advisor service again will be a feature of the convention.

Offers Aid in Selling in Australia

American manufacturers desiring representation in Australia are advised that P. Harley Moseley, American vice consul in the Sydney, Australia, consular district, will be in the United States during April, and will answer inquiries if addressed to him at the Exchange National bank, Tampa, Fla. Many Sydney firms have asked him to place their names and qualifications before manufacturers, with a view to obtaining American agencies. Mr. Moseley will devote considerable time while in the States to calling on manufacturers and assisting them in marketing their products in Australia.

Viking Tool & Machine Co., Brooklyn, N. Y., reduced its capitalization from $50,000 to $20,000.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

STANFORD STEEL CORP. on Jan. 1 purchased the Stanford Steel Products Co., Milford, Conn. The new corporation will manufacture cold-rolled strip steel. George I. Stanford is president, treasurer and general manager of the new company, Amos F. Barnes, vice president, and A. M. Kelley, secretary and assistant treasurer.

* * *

OPERATIONS are to begin late in April or early in May in the new foundry of the Hynes-Langenberg Mfg. Co., St. Louis, which now is nearing completion. The company, which manufactures steel furnaces will make all its own castings with the new equipment which is being installed.

* * *

PAWLING & HARNISCHFEGER CO., Milwaukee, manufacturer of cranes, hoists, machine tools, etc., has taken over the property of the Hercules Steel Casting Co., that city. The steel castings foundry which the Pawling company acquired in the purchase has a capacity of 1200 to 1500 tons a month with one 10-ton electric furnace.

* * *

COMMERCIAL production is expected to begin this year by the Eastern Engineering Co., Ltd., Montreal, Que., which holds patents on engines. The patent rights of the English company, Attendu Engines, Ltd., were acquired by the Eastern company. Experimental tests have shown complete satisfaction, according to A. C. Attendu, president of the Eastern Engineering Co., Ltd.

* * *

THE H. & R. Foundry Co., Cincinnati, recently incorporated for $25,000 has taken over the plant of the Phoenix Foundry Co., Wade street. It will manufacture bronze, brass and aluminum castings. Arthur Remers is president of the company and Harry Hinken, secretary and treasurer. These officers formerly were connected with the Ohio Pattern Works, Cincinnati.

* * *

CENTERLESS grinders will be built by the Heim Grinder Co., Danbury, Conn., recently incorporated to acquire the manufacturing interests of that product from the Ball & Roller Bearing Co. Manufacture will be continued in the present plant at Danbury, Conn. Henry N. Flynt is president of the new company, Clayton O. Smith, vice president, and Ferris M. Angevin, secretary and treasurer.

* * *

GRAY DORT MOTORS, Chatham, Ont., automotive manufacturer, is being reorganized, the Gray interests retiring from active participation. Robert Gray has resigned from the presidency of the company and was succeeded by J. P. Byers, formerly secretary and treasurer. W. M. Gray has retired as vice president and general manager. W. E. Finnegan was appointed general sales manager.

* * *

ORGANIZED about a year ago, the Federal Abrasive Works, Westfield, Mass., was incorporated recently with a capital stock of $50,000 by Henry F. Chandler, Percy E. Lyndon and William S. Chandler, all of Brookline, Mass. The company manufactures abrasive coated products for all purposes in reams and rolls The products used include carbide of silicon, artificial alumina, flint, emery and garnet.

* * *

THE M. D. Larkin Co., Dayton, O., dealer in supplies, tools, machinery, etc., has acquired the Dayton Iron & Steel Co., jobber of automotive supplies and equipment, heavy hardware, iron and steel. The Dayton Iron & Steel Co. will become part of the company which owns and controls the M. D. Larkin Co., the Wm. Hall Electric Co. and other companies. Former executives of the Dayton company will retire from active participation of the new company.

* * *

ALL arrangements have been completed by the Burr Foundry & Machine Co., Boston, for the acquisition of the Humphreys Machine Co., Keene, N. H. The Burr company is incorporated for $65,000. David E. Burr, its president and treasurer, was graduated from Cornell university in mechanical engineering. Shields Burr, the vice president and general manager, was graduated from Massachusetts Institute of Technology and was for several years general manager of the Aetna Foundry & Machine Co., Warren, O. Charles R. Cabot, graduate of Dartmouth college, counsel and secretary of the company, is assistant attorney general of Massachusetts. The foundry, machine shops and pattern shops of the Humphreys company will be operated in Keene, N. H.

* * *

CONSOLIDATION of the Warner Engineering Co. with the Stewart Burner Ohio Co., Cincinnati, has been announced by J. H. Stewart, president and C. S. Warner, vice president and general manager of the new company to be known as the Warner & Stewart Co. General offices have been opened at Eighth street and Broadway. The company manufactures, distributes and installs oil burning equipment. New members of the organization are, Harold S. Dwight, treasurer; J. A. Ruthmeyer, sales manager and F. P. Bachman, service manager.

* * *

AUTOMOBILE radiator caps will be manufactured by the General Automotive Mfg. Co., recently incorporated. This company will market its product through the General Automotive Corp., 600 West Jackson boulevard, Chicago. The machinery and equipment formerly owned by Miller & Pardee, Inc., has been leased. The new company, which was incorporated for $25,000, is headed by John A. Dewire. Charles A. Pardee is vice president, Howard F. Kingsley, treasurer. Harvey S. Pardee, president of the General Automotive Corp., is president of the board of the manufacturing company.

* * *

HONOLULU Iron Works, Honolulu, T. H., which about a year ago absorbed Catton, Neil & Co., Ltd., has extended its operations in building sugar mill machinery and general equipment. Officers and directors re-elected at the recent annual meeting were: T. Clive Davies, president; E. D. Tenney, E. H. Woodhouse, C. Hedemann, W. G. Hall and D. A. Fox, vice presidents; J. E. Russell, treasurer; W. B. Craig and C. V. Bennett, assistant treasurers; H. Edmondson, secretary; J. G. Rothwell, assistant secretary; Robert M. Anderson, comptroller; J. M. Dowsett, A. W. T. Bottomley, John Waterhouse, R. A. Cooke, George A. Angus and W. C. Shields, directors.

Machine Tool Buying Is Spotty

Scattered Railroad Orders Continue To Provide Bulk of Sales in Equipment Market —New York Central Recently Has Bought 28 Tools—Miscellaneous Demand Is Mostly for Single Machines

FEATURED by the recent buying of 28 tools by the New York Central the equipment market last week again was spotty. Sales in some districts were above February levels while in others the volume of business was the lowest this year. A general falling off in orders is noted, buyers showing less tendency to close on inquiries long in the market. Caution of manufacturers through the curtailment of operating schedules and hand-to-mouth orders for plain materials is reflected in the hesitation of buyers.

The Maine Central railroad closed on several tools last week, the Canadian National Railways purchased some miscellaneous items and the Southern railway is scheduled to close soon on its inquiry for its shops at Birmingham, Ala. Several middle-western lines are expected to be in the market shortly. The Westinghouse Electric & Mfg. Co. continues to buy for its plants at Homewood and Sharon, Pa. Standard Sanitary Mfg. Co. has bought several large tools for its plant at Baltimore in addition to its recent purchases. The Westinghouse Airbrake Co., Wilmerding, Pa., is expected to issue soon a list of machine shop and foundry equipment. Small tool manufacturers are meeting a good demand with increased orders being noted in New England. In the Chicago territory planers appear to be the most active of the larger tools.

The crane market continues to be quiet, with few orders being booked. A large number of inquiries are outstanding including one for a manufacturer in the Pittsburgh district for 12 miscellaneous cranes. The Westinghouse Airbrake Co. is expected to come into the market soon for cranes.

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Miscellaneous buying includes one 62-inch boring and turning mill and one 42-inch planer for the Standard Sanitary Mfg. Co., Baltimore this being in addition to purchases reported in recent issues as being made by this company. The Hay Foundry & Iron Works, Newark, N. J., has purchased four core ovens and Eastern Steel Castings, also of that city, a 4-ton teapot ladle, both orders going to the Whiting Corp. General industrial buying continues restricted. Brass manufacturers are a little more active but orders have been confined largely to single machines.

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Shows Less Activity

CLEVELAND, March 25.—Machine tool buying in this district slumped off last week with few sales of any consequence being made. Small tools continue to be disposed of in fair quantity but the larger machines are moving slowly. Inquiry also has dwindled with some manufacturers reporting less work ahead than any time since last year. Some of the tools which Westinghouse Electric & Mfg. Co. has been buying for its plants at Homewood and Sharon, Pa., have come into this territory. Orders from manufacturers outside of this district are providing more business than are those from local producers.

Few used machinery dealers report good business. In some cases used machines are being bought by companies which always have entered the new tool market for its requirements. Curtailed operations and the tendency to spend as little as possible in expansion have caused some sales which were on the point of closing to be indefinitely postponed.

Crane Awards and Inquiries of the Week

Orders Placed

Eighteen 2-ton special trolleys, to the Chisholm-Moore Mfg. Co., through Manning, Maxwell & Moore, for an unnamed concern.

Five locomotive cranes for the Canadian National Railway; two 25-ton cranes going to the Browning Co.; two 20-ton cranes to the Industrial Works, and one 35-ton crane to the Ohio Locomotive Crane Co.; these are in addition to the two 160-ton wrecking cranes, noted in a recent issue as being placed with the Industrial Works and the Bucyrus Co., respectively, and also an 18-ton locomotive crane noted as going to the Orton & Steinbrenner Co.

Three cranes, one 3-ton pneumatic jib and two 1-ton handpower jib for the Central of Georgia railroad, Savannah, Ga., to Whiting Corp.

Three 1-ton, underhung cranes, 20-foot span, and 400 feet of track for the Excel foundry Co., Lebanon, N. J., to the Chisholm-Moore Mfg. Co.

Two 12½-ton locomotive cranes for the Atlantic Coast Line, to the American Hoist & Derrick Co.

Two 15-ton cranes for the Duquesne works, Carnegie Steel Co., to the Morgan Engineering Co., Alliance, O.; reported last week as going to a northern Ohio builder.

Two 5-ton cranes for the plant at East Pittsburgh, Pa., of the Westinghouse Electric & Mfg. Co., to an unnamed builder.

Several small handpower cranes for the Central Railroad of Georgia, Savannah, Ga., to the Whiting Corp.

Single Machine Orders

250-ton transfer table, 75-foot span, for a railroad, through Dwight P. Robinson & Co., New York, to the Whiting Corp.

110-ton, 4-motor crane, 107-foot span, 10-ton auxiliary, for the Columbia Power Co., Cincinnati, to the Whiting Corp.

60-ton used industrial locomotive crane, 110-foot boom, for the Public Service Corp. of New Jersey, Newark, N. J., to Philip T. King.

30-ton electric crane, 30-foot span, for a power plant at Fall River, Mass., placed through Stone & Webster, Boston, to the Whiting Corp.

23-ton locomotive crane for a public gas company, Camden, N. J., to the McMyler Interstate Co.

20-ton locomotive crane, 50-foot boom, for a company in Lansing, Mich., to the Brown Hoisting Machinery Co.

10-ton underhung traveling crane for the Pennsylvania railroad to H. D. Conkey Co.

10-ton, 4-motor crane for the Metallurgical & Chemical Corp., New York, to the Whiting Corp.

10-ton locomotive crane, 45-foot boom, for city council, Toronto, Ont., Canada, to John T. Hepburn, Ltd.

10-ton, handpower crane, 18-foot span, for the Botany Worsted Mills, Passaic, N. J., to Alfred Box & Co.

10-ton, 27-foot span crane for the De La Vergne Machine Co., New York, to an eastern builder.

6-ton handpower traveling crane for Junction City water works, Junction City, Kans., to Whiting Corp.

5-ton electric hoist for the Damascus Crucible Steel Casting Co., Beaver Falls, Pa., to the Whiting Corp.

5-ton handpower crane, 26-foot span, for plant at Schenectady, N. Y. of American Locomotive Co., New York, to the Chisholm-Moore Mfg. Co.

4-ton, 2-motor crane, 32-foot span, for Dante Crisonino, Mt. Vernon, N. Y., to Alfred Box & Co.

3-ton electric hoist, for Samuel Smith & Sons, Paterson, N. J., to Alfred Box & Co.

Orders Pending

Twelve cranes or more from a manufacturer in the Pittsburgh district; bids being taken.

Twelve cranes for the Westinghouse Electric & Mfg. Co., Sharon, Pa.; bids now being tabulated.

Six or seven cranes for the new sheet mill of the Youngstown Sheet & Tube Co., Youngstown, O.; bids now being tabulated.

Three cranes, one 10-ton, one 2-ton and one 5-ton electric traveling, for Libbey-Owens Sheet Glass Co., Toledo, O.; pending.

Two 125-ton electric traveling cranes and one 15-ton electric traveling crane, for the Santa Fe railroad shops at San Bernardino, Cal.; pending.

200-ton locomotive hoist for the Cincinnati, Indianapolis & Western; bids asked.

15-ton trolley with 5-ton auxiliary for the American Sheet & Tin Plate Co., Sabraton works; order to be placed this week.

Cranes, electric overhead as well as locomotive type, for the Carnegie Steel Co., Homestead, Pa., and Clairton, Pa., as well as Mingo Junction, O., and other plants; bids being tabulated. The Mingo Junction coke-handling plant is to be awarded this week.

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CINCINNATI, March 25.—Characterized by a fair amount of buying and inquiry the machine tool market is described as quiet by a number of manufacturers and sellers in this territory. Several large machine tool manufacturers state that business so far this month was better than in the corresponding period of February while others state that buying has been dull throughout both this month and February. The outlook for the next three months for the Cincinnati machine tool industry is for a continuation of the present scale of manufacture which can best be described as fair. The manufacturers of planers say that the orders now on their books and the number of inquiries being received indicate a continuation of the present spotty business. Milling machines have shown more activity lately and have been in better demand than they were. Lathes are having a slow market, although several firms report receipt of some good orders during the past 10 days. The electrical tool manufacturers state that demand is holding up well in volume, while business in the metal trades has eased slightly during recent weeks. This lull is expected to be temporary. Mill and factory supply houses report business as fair, but orders are usually placed for immediate delivery.

Shows Less Activity

CLEVELAND, March 25.—Machine tool buying in this district slumped off last week with few sales of any consequence being made. Small tools continue to be disposed of in fair quantity but the larger machines are moving slowly. Inquiry also has dwindled with some manufacturers reporting less work ahead than any time since last year. Some of the tools which Westinghouse Electric & Mfg. Co. has been buying for its plants at Homewood and Sharon, Pa., have come into this territory. Orders from manufacturers outside of this district are providing more business than are those from local producers.

Few used machinery dealers report good business. In some cases used machines are being bought by companies which always have entered the new tool market for its requirements. Curtailed operations and the tendency to spend as little as possible in expansion have caused some sales which were on the point of closing to be indefinitely postponed.

Crane Awards and Inquiries of the Week

Orders Placed

Eighteen 2-ton special trolleys, to the Chisholm-Moore Mfg. Co., through Manning, Maxwell & Moore, for an unnamed concern.

Five locomotive cranes for the Canadian National Railway; two 25-ton cranes going to the Browning Co.; two 20-ton cranes to the Industrial Works, and one 35-ton crane to the Ohio Locomotive Crane Co.; these are in addition to the two 160-ton wrecking cranes, noted in a recent issue as being placed with the Industrial Works and the Bucyrus Co., respectively, and also an 18-ton locomotive crane noted as going to the Orton & Steinbrenner Co.

Three cranes, one 3-ton pneumatic jib and two 1-ton handpower jib for the Central of Georgia railroad, Savannah, Ga., to Whiting Corp.

Three 1-ton, underhung cranes, 20-foot span, and 400 feet of track for the Excel foundry Co., Lebanon, N. J., to the Chisholm-Moore Mfg. Co.

Two 12½-ton locomotive cranes for the Atlantic Coast Line, to the American Hoist & Derrick Co.

Two 15-ton cranes for the Duquesne works, Carnegie Steel Co., to the Morgan Engineering Co., Alliance, O.; reported last week as going to a northern Ohio builder.

Two 5-ton cranes for the plant at East Pittsburgh, Pa., of the Westinghouse Electric & Mfg. Co., to an unnamed builder.

Several small handpower cranes for the Central Railroad of Georgia, Savannah, Ga., to the Whiting Corp.

Single Machine Orders

250-ton transfer table, 75-foot span, for a railroad, through Dwight P. Robinson & Co., New York, to the Whiting Corp.

110-ton, 4-motor crane, 107-foot span, 10-ton auxiliary, for the Columbia Power Co., Cincinnati, to the Whiting Corp.

60-ton used industrial locomotive crane, 110-foot boom, for the Public Service Corp. of New Jersey, Newark, N. J., to Philip T. King.

30-ton electric crane, 30-foot span, for a power plant at Fall River, Mass., placed through Stone & Webster, Boston, to the Whiting Corp.

23-ton locomotive crane for a public gas company, Camden, N. J., to the McMyler Interstate Co.

20-ton locomotive crane, 50-foot boom, for a company in Lansing, Mich., to the Brown Hoisting Machinery Co.

10-ton underhung traveling crane for the Pennsylvania railroad to H. D. Conkey Co.

10-ton, 4-motor crane for the Metallurgical & Chemical Corp., New York, to the Whiting Corp.

10-ton locomotive crane, 45-foot boom, for city council, Toronto, Ont., Canada, to John T. Hepburn, Ltd.

10-ton, handpower crane, 18-foot span, for the Botany Worsted Mills, Passaic, N. J., to Alfred Box & Co.

10-ton, 27-foot span crane for the De La Vergne Machine Co., New York, to an eastern builder.

6-ton handpower traveling crane for Junction City water works, Junction City, Kans., to Whiting Corp.

5-ton electric hoist for the Damascus Crucible Steel Casting Co., Beaver Falls, Pa., to the Whiting Corp.

5-ton handpower crane, 26-foot span, for plant at Schenectady, N. Y. of American Locomotive Co., New York, to the Chisholm-Moore Mfg. Co.

4-ton, 2-motor crane, 32-foot span, for Dante Crisonino, Mt. Vernon, N. Y., to Alfred Box & Co.

3-ton electric hoist, for Samuel Smith & Sons, Paterson, N. J., to Alfred Box & Co.

Orders Pending

Twelve cranes or more from a manufacturer in the Pittsburgh district; bids being taken.

Twelve cranes for the Westinghouse Electric & Mfg. Co., Sharon, Pa.; bids now being tabulated.

Six or seven cranes for the new sheet mill of the Youngstown Sheet & Tube Co., Youngstown, O.; bids now being tabulated.

Three cranes, one 10-ton, one 2-ton and one 5-ton electric traveling, for Libbey-Owens Sheet Glass Co., Toledo, O.; pending.

Two 125-ton electric traveling cranes and one 15-ton electric traveling crane, for the Santa Fe railroad shops at San Bernardino, Cal.; pending.

200-ton locomotive hoist for the Cincinnati, Indianapolis & Western; bids asked.

15-ton trolley with 5-ton auxiliary for the American Sheet & Tin Plate Co., Sabraton works; order to be placed this week.

Cranes, electric overhead as well as locomotive type, for the Carnegie Steel Co., Homestead, Pa., and Clairton, Pa., as well as Mingo Junction, O., and other plants; bids being tabulated. The Mingo Junction coke-handling plant is to be awarded this week.

Recent Industrial Business Changes

THE New York offices of the Cleveland Crane & Engineer-Co., Wickliffe, O. and the Cleveland Punch & Shear Works Co., Cleveland, have been moved from 50 to 2024, 30 Church street. A. E. Ellison, formerly manager of the New York office of the Clyde Iron Works Sales Co., has been appointed to represent the former company. C. W. Hancock will continue to represent the Cleveland Punch & Shear Works Co. and R. E. Nelles, the tramrail division of the Crane company, also affected by the recent change in address.

* * *

Kalter & Piaturck Iron Works, Brooklyn, N. Y., has changed its name to Kalter Iron Works.

* * *

Frank D. Chase, Inc., engineer, has moved its offices to 720 North Michigan avenue, Chicago.

* * *

The Donner Steel Co., Inc., Buffalo, N. Y., has opened a district office in the Union Trust building, Cleveland.

* * *

The Cleveland offices of the Bethlehem Steel Co. recently were moved from 1535 Guardian bank building, to 2008 Union Trust building.

* * *

The plant at Brooklyn, N. Y., of the Enameled Products Corp., New York, is being removed to Birmingham, Ala. The company manufactures glazed enamelware bathroom fixtures.

* * *

The Florida Co-Operative Machinery Co., Birmingham, Ala., has removed from that city to Tampa, Fla. Company operates machine shop and does general foundry work. J. Heinze is president.

* * *

The Brass City Machine & Tool Co., Waterbury, Conn., manufacturer of machines and tools for making ball bearings, buttons, watches and automobile parts, has moved into larger quarters in that city.

* * *

The McMyler-Interstate Co., Cleveland, builder of locomotive cranes, steam shovels, pile drivers, and other machinery and equipment, has opened a branch office at 619 Genesse building, Buffalo, N. Y., in charge of J. E. McFate, Buffalo district representative.

* * *

Bahman Iron Works plant, Bolander avenue and the Baltimore & Ohio railroad tracks, Dayton, O., has been sold to Charles C. Blackmore, 1015 East Fifth street. Dayton Toy & Specialty Co. occupies building.

* * *

The Todd Shipyards Corp., 25 Broadway, New York, announces the official opening on March 15 of its new branch plant at New Orleans known as the Todd Engineering Drydock & Repair Co., Inc.

* * *

Sterling Grinding Wheel Co., Tiffin, O., purchased two years ago by the Cleveland Stone Co., Cleveland, will move its offices to the latter city in conformity with the Cleveland company's program of expansion.

* * *

Gettelman & Marcus Co., iron and steel broker, 425 East Water street, Milwaukee, has been incorporated under the same name, with a nominal capital of $3000. The owners are Sidney and Ben Grettelman and Harry F. Marcus.

* * *

The Southern Mfg. Co., 1014 North Twenty-eighth street, Birmingham, Ala., now will operate as the Dixie Metal Products Co., Inc., manufacturer of sheet metal specialties for jobbers. C. E. Cole is president, W. E. Gibson, vice president, Ben Davis, secretary and D. D. Bentley, sales manager.

* * *

Waldo, Egbert & McClain, Inc., Buffalo and Boston., has been appointed by Wickwire-Spencer Steel Corp. as exclusive sales agent for its machine-cast pig iron, produced at Buffalo. The appointment was effective March 1. The Wickwire corporation will continue to handle basic sales exclusively.

* * *

The Yost Gearless Motor Co. and the Superior Spring Co., Springfield, O., manufacturers of springs, etc., will be merged into one organization April 1, to be known as the Yost-Superior Co. The company then will manufacture motor washers and springs. Productive facilities are to be doubled, according to B. F. Downey, secretary and treasurer of the Superior company.

* * *

The J. H. Krause Supply Co. has been organized at 633 South Main street, Rockford, Ill., for $50,000 to take over the business of J. H. Krause. F. W. Smith, formerly of the Harris Bros. Co., Chicago, is secretary, treasurer and general manager of the new company, which will deal in machinery, structural steel, mill, plumbing and heating supplies.

* * *

Coatesville Boiler Works, Philadelphia, builder of boilers and other steel plate construction, now will manufacture the gas producers formerly built by the Gas Producer & Engineering Corp., New York. Certain changes in connection with the ownership of the latter company results in this change. The two sales departments also will co-operate in sale of the Gas Producers company's products.

* * *

Crouse-Hinds Co., Syracuse, N. Y., manufacturer of conduit, guy-wire anchors and transmission fittings, has sold its business and equipment to Iron Products Corp., LaCrosse, Wis., where the two plants now are being consolidated. The Iron Products company will install two additional forging hammers and some other tools. It is likely the plans for erecting an addition to the plant will mature before the end of six months, owing to the already crowded condition of the shops.

* * *

Glancy Malleable Corp., Waukesha, Wis., operating the plant of the Waukesha Malleable Iron Co., under lease since 1922, is taking over the large gray iron foundry built for Samson Tractor Co. when a $2,500,000 works was built for it at Janesville, Wis., in 1918. The Samson foundry will be equipped with a 20-ton air furnace to convert it from gray iron to malleable casting, and it will be reopened about May 1, with L. H. Pollock, now assistant to L. A. Williams, works manager at Waukesha, as general superintendent.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

OAKLAND, CAL.—The Pacific Malleable Castings Co. is constructing a $35,000 foundry at the foot of Eighty-fifth avenue.

OAKLAND, CAL.—The Marchant Foundry Co. is constructing foundry costing about $10,000 at East Tenth street near High street.

GEORGETOWN, CONN.—Plans are being prepared for an $80,000 extension to the plant of Gilbert & Bennett Co. Included are a 3-story, 48 x 110-foot and a 2-story, 25 x 62-foot wire mill, and a 1-story, 30 x 33-foot substation. Greenwood & Noerr, Hartford, Conn., is engineer.

NEW BRITAIN, CONN.—The American Hardware Corp. will erect 6-story addition to the Russell & Erwin division here.

WINSTED, CONN.—Universal Ball Bearing Co. has purchased property which it will remodel for manufacturing purposes.

CHICAGO—Aetna Ball Bearing Co., 2744 High street, is installing additional machinery in plant addition recently completed.

CHICAGO—The Sinko Tool & Mfg. Co., 1632 North Halstead street, has purchased a site on Crawford avenue near Lake street, upon which it plans to build a factory.

CHICAGO—The Sanitary Scale Co., 565 West Washington boulevard, plans starting construction of first unit of plant at Belvidere, Ill. Preliminary construction is to cost about $25,000.

CHICAGO—Columbia Metal Co. plans 1-story plant, 50 x 50 feet, of brick, at Fairfield and Taylor streets. Robert Silverstein and Nathan Levitt, 2719 Roosevelt road, are owners.

CHICAGO—Master Motor Truck Mfg. Co., 2381 Archer avenue, has been incorporated for $25,000 to manufacture and deal in motor-driven vehicles and accessories by Homer C. Dawson, Harold F. White and David Larson.

CHICAGO—Ster-Electron Corp., 122 South Michigan avenue, has been incorporated for $10,000 to manufacture and deal in machines, devices, etc., by C. R. Larrabee, L. M. Bowden and H. G. Ross.

CHICAGO—Paramount Lock Co., 31 Root street, has been incorporated for $2000 to manufacture locks, hardware and other metal products, by Theodore H. Buesching, Delia L. Schell and Victor J. Cramer.

CHICAGO—Hylyte Laboratories Corp., 619 South Dearborn street, has been incorporated for $50,000 to manufacture and deal in electric batteries, by Mary L. Hyre, Alice M. Arentz, Alex Wagner, William A. Arentz and R. T. Hyre.

CHICAGO—Paul Gerhardt, 64 West Randolph street, is preparing plans for a 6-story reinforced concrete plant here for A. J. Lindemann & Hoverson Co., Milwaukee, stove manufacturer. Plans are to be ready about April 15.

CHICAGO—National Train Control Co., 80 East Jackson boulevard, has been incorporated for $10,000 to manufacture and deal in machinery, railroad equipment and appliances, cab signals, etc., by S. A. Bostwick, J. P. Robinson and E. E. Stone.

CHICAGO—Auto Electrical Engineers, 6729 Sheridan road, has been incorporated for $10,000 to manufacture and deal in automotive electrical appliances and accessories, by Jenny Winzenburg, David H. Hirsh and Fred C. Winzenburg.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

CHICAGO—Eggers Schillo Co., 364 North Harding avenue, has been incorporated for $75,000 to manufacture and deal in products of iron, steel and other metals, by John B. Heinemann, Joseph E. Fitch and L. W. Benson.

CHICAGO—Hessey Varlow Mfg. Co., 38 South Dearborn street, has been incorporated with 4000 shares no par value stock to manufacture and deal in double sickle devices for harvesting machines, by F. W. J. Varlo, R. D. Hessey and R. M. Calkins.

CHICAGO—Eugene Silver & Co., 2326 Indiana avenue, has been incorporated for $50,000 and 500 shares no par value stock to manufacture and deal in automobiles, accessories and trucks, by Henry A. Weyl, Eugene W. Silver and George F. Eggart.

CHICAGO—Becker & Hoyne Mfg. Co., 14 South Jefferson street, has been incorporated for $10,000 to manufacture tools, dies and special machinery by Kurt E. Hoyne, Martin D. Becker and John W. McCarthy.

CHICAGO—Consolidated Devices Co., 522 Milwaukee avenue, has been incorporated for $10,000 to manufacture and deal in automobile equipment, accessories and supplies, by Alex Sternberg, William Recht and Max Sternberg.

MOLINE, ILL.—Harrington-Seaberg Fire Alarm Telegraph Co. will construct a 2-story, 70 x 120-foot, brick plant costing about $25,000. The company manufactures fire alarm boxes, magnetic sign flashers and police call boxes. Mr. Seaberg is president, Alex Carlson, vice president and F. H. Harrington, secretary.

SOUTH BEND, IND.—Standard Sanitary Mfg. Co., Pittsburgh, manufacturer of bath tubs, operator of foundries, etc., has established a wholesale distributing center in this city.

BATH, ME.—Watson Frye Co. has been incorporated for $200,000 to conduct a general machine shop and foundry business, to mine and transport coal, iron and steel, etc.

BOSTON—Whittredge Portable Buildings Co. is adding 50 x 200-foot plant to its facilities. Company manufactures metal portable garages.

BOSTON—The Standard Machine Products Corp. has been incorporated with 1000 shares no par value common stock by Margaret L. Powers, Quincy, Mass., Clyde H. Osborne, Whitman, Mass., and Albert J. Felty, Cambridge, Mass.

DETROIT—The Nagel-Wallace Brass Works, 3529 Michigan avenue, plans enlargement of manufacturing plant, according to William Nagel, president. Company fabricates copper and brass hardware.

ST. PAUL, MINN.—Minnesota Mining & Mfg. Co. plans 2-story, 80 x 160-foot plant addition. E. B. Ober, 791 Forest street, is president.

JERSEY CITY, N. J.—The Public Service Electric Co. will start work shortly on a $40,000 addition to its power plant at 153-55 Culver avenue.

PLAINFIELD, N. J.—The International Motor Corp. has awarded the general contract for plant additions to Barney Ahlers Construction Corp., 110 West Fortieth street, New York. There will be two 4-story additions, 85 x 125 feet, and 75 x 150 feet respectively.

ALBANY, N. Y.—Cohoes Iron Foundry & Machine Co. has been incorporated for $50,000 to operate foundry and machine shop business, by H. E. and W. P. and A. E. Johnson, with A. P. McKean, Troy, N. Y., as attorney.

AMSTERDAM, N. Y.—Automatic Roving Check Co. has been incorporated for $30,000 to build machines, by H. T. Warnick, C. D. Stewart and C. C. Collette, with C. S. Nishet as attorney.

BROOKLYN, N. Y.—Storm King Electric Corp. has been incorporated for $300,000 to manufacture electrical machinery appliances, by R. J. Gorman, 65 Cedar street, New York.

BROOKLYN, N. Y.—A. N. Nelson has been incorporated for $50,000 to manufacture hardware, by A. N. and C. M. Nelson and E. F. Simpson, with Brennan, Flamman & Simpson, 44 Court street, as attorney.

BUFFALO, N. Y.—Macbeth Body Co. has been incorporated with 40,000 shares preferred stock, $10 par value, and 5000 shares no par value common, to build automobile bodies, by A. H. and F. W. Buse and E. J. Spang; with Bosley & Morey as attorney.

NEW YORK—Cornell Iron Works has been incorporated for $180,000 by J. M. and M. L. and J. B. Cornell, with Davis, Symmes & Schreiber, 55 Liberty street, as attorney.

NEW YORK—Western Steel Metal Ceiling Co. has been incorporated for $5000 by M. Moskowitz, S. Fromowitz and R. Israel, with E. I. Silberstein, 63 Park Row, as attorney.

NEW YORK—Alterations and the erection of an addition to a garage, costing $400,000, will be made by Bloomingdale Bros., Lexington Ave. and Fifty-ninth street. E. H. Janes, 70 East Forty-fifth street, is engineer.

NEW YORK—Ponsell Floor Machine Co. has been incorporated for $250,000 by T. F. Casey, F. A. McAuley and F. Booth, with MacDonald, Ackley & Casey, 15 William street, as attorney.

NEW YORK—Standard Paper Box Machinery Co. has been incorporated for $15,000 to build machinery, by L. and F. Schulman and J. Adams, with A. Rosenbluth, 233 Broadway, as attorney.

NEW YORK—Ex-Eli Instrument Corp. has been incorporated for $20,000 to manufacture thermometers and other temperature recorders, by J. H. Mooney, A. Boernstein and I. Klam-

kin, with Gordon, Winston & Goddard, 799 Broadway, as attorney.

NEW YORK—Ness Electric Welding Machine Co. has been incorporated for $100,000 to build machinery, by H. J. and M. A. Ness, and D. T. Pape, with D. A. Wilson, 15 Park Row, as attorney.

NEW YORK—The Consolidated Gas Co. is arranging a security issue, a large portion of which will be used in the construction of a power plant at the foot of East Fourteenth street.

NEW YORK—General Heating Corp. of America, has been incorporated for $250,000 to build heating and other mechanical devices, by S. L. Wentz, E. H. Pryce and H. M. Twitchell, with Remington & Meek, 141 Broadway, as attorney.

NEW YORK—Commugraph Co. has been incorporated for $1,000,000 to manufacture, establish and operate telephone and wireless systems, by R. D. Whitmore, H. W. Cronk and M. K. Mayer, with F. W. Burr, 256 Broadway, as attorney.

NEW YORK—Otis Engine Corp. has been incorporated with 1000 shares no par value common stock to build motors, by O. Presbrey, J. D. Uuman Jr. and G. Zeim, with Wilder, Ewen & Patterson, 45 Cedar street, as attorney.

NEW YORK—Supply & Trading Co. has been incorporated with 100 shares no par value common stock to deal in merchandise and machinery, by M. F. and M. Mautner and F. L. Hallenbeck, with F. J. Knorr, Albany, N. Y.

NEW YORK—Zerdler Corp. has been incorporated with 1000 shares no par value common stock to manufacture dishwashing and laundry machines, by G. V. Reilly, H. C. Hand and S. C. Wood, with White & Case, 14 Wall street, as attorney.

NEW YORK—San-Ford Automotive Products Corp. has been incorporated with 2500 shares $100 par preferred stock and 5000 shares no par value common stock, to build machinery, by F. T. Sanford, A. S. Doubleday and A. B. Uniacke, with W. L. Post, 50 Church street, as attorney.

ROCHESTER, N. Y.—Caldwell Burners has been incorporated with 500 shares preferred stock, to manufacture lamps and heating devices, by J. Dinse, W. C. O'Keefe and W. E. Sham, with Culley & Dinse as attorney.

ROCHESTER, N. Y.—No-Sound, has been incorporated with 3000 shares no par value common stock to build writing machines, by A. S. Tennant, D. C. and M. O. Munson, with Tennant & Munson, Westfield, N. Y., as attorney.

SCHENECTADY, N. Y.—Buffalo Eastern Co. has been incorporated for $200,000 to build motors and engines, by E. H. Oversmith, A. J. Gee and H. E. Blodgett, with Blodgett & Smith as attorney.

YONKERS, N. Y.—The Otis Elevator Co., has purchased property adjoining its main plant here to provide for future extensions.

CHARLOTTE, N. C.—Mecklenburg Iron Works is building $12,000 machine shop on Frazier avenue extension. Shop will be 50 x 100 feet. Office building also will be constructed. Present office is at 510 West Trade street.

CLEVELAND—Walworth Run Foundry Co. has purchased 2 acres adjoining its present plant which may be used for expansion.

FOSTORIA, O.—The Leeseburg Machine & Mfg. Co. will install additional equipment to double plant capacity. H. C. Leeseburg is president, E. S. Barkley vice president and H. F. Leeseburg secretary and treasurer.

LIMA, O.—The Artkraft Sign Co. plans construction of $40,000 plant. Charles G.

Warehouse Steel Prices

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.515c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Cleveland	3.36c
Detroit	3.35c
Los Angeles	3.75c
New York	3.54c
Philadelphia	3.47c
Pittsburgh	3.15c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.35c
St. Paul	3.45c

IRON BARS

Boston	3.515c
Buffalo	3.50c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Detroit	3.35c
New York	3.54c
Philadelphia	3.47c
St. Louis	3.35c

SHAPES, STRUCTURAL

Boston	3.615c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Los Angeles	3.85c
New York	3.64c
Philadelphia	3.57c
Pittsburgh	3.25c
San Francisco	3.60c
Seattle (large shapes)	3.60c
St. Louis	3.45c
St. Paul	3.55c

PLATES

Boston	3.615c
Boston, 3/16-inch	3.04c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Detroit, 3/16-inch	3.45c
Los Angeles	4.00c
New York	3.64c
Philadelphia	3.57c
Philadelphia, 3/16-inch	3.82c
Pittsburgh	3.25c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.55c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.515c
Buffalo	4.30c
Chicago	4.00c
Cincinnati	4.10c
Cleveland	3.60c to 4.06c
Detroit	4.15c
Los Angeles	5.00c
New York	4.34c
Philadelphia	4.10c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.10c
St. Paul	4.25c

NO. 28 BLACK SHEETS

Boston	5.00c
Buffalo	5.00c
Chicago	4.70c
Cincinnati	4.90c
Cleveland	4.50c to 4.65c
Detroit	4.85c
Los Angeles	6.20c
Philadelphia	5.15c
New York	4.85c
San Francisco	5.80c
Seattle	6.00c
St. Louis	4.75c
St. Paul	4.95c

NO 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	6.10c
Chicago	5.60c
Cincinnati	5.90c
Cleveland	5.60c to 5.80c
Detroit	6.00c
Los Angeles	7.00c
New York	5.85c
Philadelphia	6.25c
San Francisco	6.50c
Seattle	7.00c
St. Louis	5.75c
St. Paul	5.75c to 6.00c

BANDS

Boston	4.315c
Buffalo	4.35c
Chicago	3.95c
Cincinnati	4.00c to 4.10c
Cleveland	4.01c to 4.16c
Detroit	4.10c
Los Angeles	4.65c
New York	4.39c
Philadelphia	4.27c
Pittsburgh	3.95c
San Francisco	4.50c
Seattle	4.50c
St. Paul	4.20c

HOOPS

Boston	5.80c
Buffalo	4.65c
Chicago	4.55c
Cleveland	4.01c to 4.16c
Detroit	4.95c
New York	5.19c
Philadelphia, 1 inch and wider 20 gage and heavier	4.27c
Pittsburgh	3.95c
Seattle	5.50c
St. Paul	4.80c

COLD FINISHED STEEL

Boston (rounds)	4.35c
Boston (shapes)	4.85c
Buffalo (rounds)	4.45c
Buffalo (shapes)	4.95c
Chicago (rounds)	4.00c
Chicago (shapes)	4.50c
Cincinnati (rounds)	4.25c
Cincinnati (shapes)	4.75c
Cleveland (rounds)	4.10c
Cleveland (shapes)	4.60c
Detroit (rounds)	4.30c
Detroit (shapes)	4.80c
Los Angeles (rounds)	5.60c
New York (rounds)	4.40c
New York (shapes)	4.90c
Philadelphia (rounds)	4.35c
Philadelphia (shapes)	4.85c
Pittsburgh (rounds)	4.05c
Pittsburgh (sq. hex and flats)	4.55c
San Francisco (rounds)	5.50c
Seattle (rounds)	5.00c
St. Paul (rounds	4.25c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe

	Black	Galvanized
⅛-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	Galvanized
⅛-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago**
San Francisco
Cincinnati **Detroit**

Myers is president, R. R. Trubey secretary and J. M. Schilling sales manager. Plant will be 60 x 250 feet.

PORTLAND, OREG.—United States Grapples Co. has been incorporated for $500,000 by A. E. Gebhart and associates, box 269, Portland. Company will operate general steel and iron foundry and manufacturing plant.

COATESVILLE, PA.—Fire recently damaged the machine shop of the Bethlehem Steel Co. plant here.

PHILADELPHIA—A foundry and machine shop will be erected by H. S. Getty & Co., Inc., 1539 Cabot street, manufacturer of hardware. Plans have been prepared by Walker & Carswell, 1015 Chestnut street.

PHILADELPHIA—Bids are being received by the Columbia Steel Equipment Co., Third and Wingehocking streets, manufacturer of steel furniture, etc., on a 1-story addition, 100 x 105 feet. J. Frank Clark, 23 South Fifteenth street, is the architect.

MEMPHIS, TENN.—The Universal Pipe Threading Machine Co. has been incorporated for $100,000 by Thornton Newsum and W P. Maury.

CORPUS CHRISTI, TEX.—Pressed Metal Co. has been incorporated for $10,000 by C. J. Jennings and M. W. Shely.

WHEELING, W. VA.—The Novelty Toy & Mfg. Co. is contemplating building plant.

WHEELING, W. VA.—Glen Park Motor Co. has been granted permit to erect 1-story, 83 x 85-foot brick, tile and structural steel plant. Abe Vessels is contractor.

WHEELING, W. VA., Waterhouse Brass Foundry has taken an option on a site at Twenty-fifth and Wood streets where it proposes to make extensive improvements. Plant will be operated as modern brass foundry.

GREEN BAY, WIS.—Wisconsin Public Service Corp. will spend over half a million dollars in 1924 in constructing five water-power generator stations and three steam stations between this city and Oshkosh.

JANESVILLE, WIS.—Clancy Malleable Corp. will construct and operate malleable iron foundry. Plant formerly used by the Sampson Tractor Co. on South River street, is being converted. A. R. Clancy is president.

LA CROSSE, WIS.—Charles W. Noble, general contractor, has been awarded the work of designing and erecting a 2-story garage and repairshop, 50 x 150 feet, for Fox Bros., at 129-131 North Third street.

MILWAUKEE—The Central Foundry Corp. has been incorporated for $75,000 by William E. Krause, Herman Deln and Leo J. Landry, attorney, 425 East Water street, to open a gray iron foundry in West Allis.

RACINE, WIS.—Simms Foundry Corp., Layard and Douglas avenues, plans addition to plant. Action to be taken this spring.

SHEBOYGAN, WIS.—Garton Toy Co. has let contracts for $50,000 addition to its factory at North Water street and Niagara avenue. Equipment is being purchased.

Business in Canada

VANCOUVER, B. C.—Powell River Co., Ltd., plans $4,000,000 improvements this year, including increase of horsepower from 24,400 to 50,000, for which considerable hydroelectrical equipment will be required.

BELLEVILLE, ONT.—Carthage Machine Co. of Canada, Ltd., has been incorporated to acquire and take over the plant and business of the J. C. Wilson Mfg. Co., to manufacture and assemble machinery, metal castings, and to carry on general foundry business, with $120,000 capital, by Addison F. Wardwell, of Watertown, N. Y.; Arthur K. Hinds, Carthage, N. Y.; Fred S. Wilson and Francis E. O'Flynn, of Belleville.

COBALT, ONT.—Walsh Katrine Gold Mines, Ltd., have been incorporated to carry on mining, smelting and refining business with $3,000,000 capital stock, by Hugh Walsh, Peter McEwen, Irvine McPhail and others.

LONDON, ONT.—Service Truck Co., Ltd., has been incorporated for $100,000 to manufacture and deal in automobiles, trucks, motors, tractors, etc., by George H. Perrin, John S. Blay and Ashton R. Douglas.

MIDLAND, ONT.—The Knowles Truck Co. of Toronto will start work at once on alterations to manufacturing building on Wagstaff drive to cost $25,000 and will purchase equipment.

NIAGARA FALLS, ONT.—The Niagara Wire Weaving Co. is building addition to its plant and is in the market for equipment, including a milling machine, either planer or universal type. E. J. Buel is manager.

OWEN SOUND, ONT.—A. H. Harker, Ltd., has been incorporated to manufacture and deal in automobiles, trucks, machinery, etc., with $50,000 capital, by Arleigh H. Harker, James A. Tugman and Herbert E. Donald.

TORONTO, ONT.—Miller Independence Mines, Ltd., has been incorporated to carry on general mining, smelting and refining business with $3,000,000 capital, by Charles B. Nasmith, Robert Fennell, Joseph L. Shannon and others.

TORONTO, ONT.—Hirst Mfg. Co., Ltd., has been incorporated to manufacture iron, steel, metal products, and to carry on business of casting, forging, rolling, tinning, galvanizing metals, etc., with $40,000 capital, by William B. McHenry, Henry E. C. Cornell and John F. Boland.

MONTREAL—The Canadian Steel Strapping Co., Ltd., has been incorporated to manufacture iron, steel, wire and metal goods of all kinds, etc., with $50,000 capital, by Henry N. Chauvin, John J. Meagher and Henri Crepeau.

New Trade Publications

ROTARY PUMPS—Lammert & Mann Co., Chicago, in a broadside, show the entire line of dry vacuum and pressure pumps from their plant, with descriptions of the various types and specifications.

CIRCUIT BREAKERS—A new bulletin issued by the Roller-Smith Co., New York, is devoted to a description of circuit breakers. Much tabular matter relative to electric loads for various types of current is presented.

BOILER-RETURN TRAPS—A method of positive return of condensation to the boiler of a heating apparatus and to remove entrained air from radiators and pipes is set forth in eight pages of a bulletin by Warren Webster & Co., Camden, N. J. Every detail of construction, installation and operation is set forth so it may be understood readily.

CHAIN FURNACE SCREENS—Use of chain screens over furnace and oven doors to interrupt heat radiation and at the same time allow view of the interior, as well as to give ingress to material to be heated, with a minimum loss of heat, is explained in a catalog issued by the E. J. Codd Co., Baltimore.

BOILER WATER PURIFIER—The Brock Engineering Co., Inc., St. Louis, has issued a 20-page booklet describing the evils of boiler scale and a method of removing chemical constituents from feed water without coils, pans, trays or chemicals. The effect of the scale on tubes is shown in illustrations and details of construction of the purifier are presented.

TURNTABLES—A recent catalog of the Bethlehem Steel Co., Bethlehem, Pa., illustrates the twin-span turntable developed to meet the increasing weight of locomotives and the capacity required in turntables in modern railway traffic. Saving in length of table, due to the fact locomotives need not be balanced on the center, is an argument for their economy. Details of construction and illustrations of actual installations complete the book.

SCREW THREAD COMPARATORS—The Jones & Lamson Machine Co., Springfield, Vt., has issued a "brownies" book to explain in simple language intelligible to the layman how screw threads are measured by the comparator. The brownies are "J" and "L" and they prance through the pages to show the reader how they reject the poor threads and save many good ones that would be rejected by the gage. It is worth reading by anyone who is at all interested in machinery.

MATERIAL HANDLING EQUIPMENT—The Yale & Towne Mfg. Co., Stamford, Conn., in a catalog recently issued, presents a thoughtful and well illustrated discussion by Henry R. Towne of the comparative efficiencies of three types of chain blocks. The treatise serves as a guide to users in the choice of such equipment. The differential, the screw-geared and the spur-geared type of blocks, all of which are manufactured by this company, are rated as 31 per cent, 40 per cent and 80 per cent efficient. The illustrations graphically portray the work accomplished by each. In the remainder of the catalogue the various types of equipment and details of its construction are described.

RECUPERATORS—An unusually attractive and informative handbook on recuperation has just been issued by the Calorizing Co., Pittsburgh. It deals with the theory of recuperation as applied to furnaces and with the advantages of recuperation to types of heat salvage apparatus, principles of combustion, improvement of construction reduction of oxidation, and influence of recuperation on flame temperature. Recuperator design is discussed and the recuperator built by the Calorizing Co. is described and illustrated. The book contains numerous charts in color, and reproductions of blueprints of various types of apparatus for recuperation.

AIRCO
DAVIS APPARATUS
AIR REDUCTION - BOURNONVILLE CO.

ANYTHING AND EVERYTHING
FOR OXYACETYLENE WELDING AND CUTTING

Public faith in a product is a reflection of faithful performance. Thus, consistently, have Airco Oxygen and Airco Acetylene built up good-will.

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Manufacturer of Airco Oxygen — Airco Acetylene — Airco-Davis-Bournonville Welding and Cutting Apparatus and Supplies, Acetylene Generators, and Specially Designed Machines for Automatic Welding and Cutting— Nitrogen, Argon and other Airco Atmospheric Gas Products

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Home Office: 342 Madison Avenue, New York, N. Y.

Airco District Offices, Plants and Distributing Stations conveniently located throughout the Country.

Air Reduction Sales Company maintains its own Apparatus Repair Shops in Airco District Office cities.

"Airco Oxygen and Acetylene Service is Good Service."

SERVICE ECONOMY

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	14.00 to 15.00
Boston (dealers)	12.00 to 12.50
Buffalo	18.50 to 19.00
Chicago	15.75 to 16.25
Cleveland	17.50 to 17.75
Cincinnati	14.00 to 14.50
Detroit (dealers)	15.00 to 15.50
Eastern Pennsylvania	17.00 to 18.00
New York (dealers)	12.00 to 12.50
Pittsburgh	18.50 to 19.50
St. Louis	15.75 to 16.25
Valleys	18.50 to 18.75
No. 1 railroad steel New York (dealers)	12.50 to 13.00

COMPRESSED SHEETS

Buffalo	17.50 to 18.50
Chicago	13.00 to 13.50
Cleveland	15.25 to 15.50
Detroit (Dealers)	13.50 to 14.00
Pittsburgh	17.50 to 18.00
Valley	17.00 to 17.50

BUNDLED SHEETS

Buffalo	13.50 to 14.00
Cincinnati	10.00 to 10.50
Cleveland	11.50 to 11.75
Detroit	11.50 to 12.00
Eastern Pennsylvania	14.50 to 15.00
Pittsburgh	16.00 to 16.50
St. Louis	11.00 to 11.50
Valleys	15.00 to 15.25

SHEET CLIPPINGS, LOOSE

Chicago	11.00 to 11.50
Detroit	10.50 to 11.00

STEEL RAILS, SHORT

Birmingham	12.00 to 12.50
Boston (dealers)	12.00 to 12.50
Chicago	19.50 to 20.00
Cincinnati	18.00 to 18.50
Cleveland (over 6 ft.)	16.50 to 16.75
St. Louis	20.50 to 21.00

STOVE PLATE

Birmingham	15.50 to 16.00
Boston (consumers)	16.00 to 16.50
Buffalo	17.00 to 17.50
Chicago	18.00 to 18.50
Cincinnati (net tons)	10.50 t o11.00
Cleveland	15.25 to 15.75
Detroit (net ton) (dealers)	15.50 to 16.00
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	13.00 to 13.50
Pittsburgh	14.50 to 15.00
St. Louis	18.25 to 18.75

LOW PHOSPHORUS

Buffalo	21.50 to 22.00
Cincinnati	14.50 to 15.00
Eastern Pennsylvania	22.00 to 23.00
Pitts., billets and bloom crops	23.00 to 23.50

SHOVELING STEEL

Chicago	15.50 to 16.00
Pittsburgh	15.00 to 15.50
St. Louis	15.50 to 16.00

KNUCKLES, COUPLERS, SPRINGS

Chicago	19.00 to 19.50
Eastern Pennsylvania	21.50 to 22.00
Pittsburgh	21.00 to 21.50
St. Louis	21.00 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	16.50 to 17.00
Eastern Pennsylvania	16.50 to 17.00
St. Louis	18.00 to 18.50

BOILER PLATE, CUT

St. Louis	11.00 to 11.50

ANGLE BARS—STEEL

Chicago	18.00 to 18.50
St. Louis	18.25 to 18.75

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	12.00 to 13.00
Boston (dealers)	13.50 to 14.00
Buffalo	16.00 to 17.00
Cleveland, No. 1	14.00 to 14.50
Chicago, No. 1	15.25 to 15.75
Chicago, No. 2	15.75 to 16.25
Cincinnati, No. 1	11.50 to 12.00
Detroit, No. 2	15.00 to 15.50
Eastern Pennsylvania	18.00 to 19.00
New York, No. 1 (dealers)	15.00 to 16.00
Pittsburgh, No. 1	17.00 to 17.50
Pittsburgh, No. 2	18.50 to 19.50
St. Louis, No. 1	15.50 to 16.00
St. Louis, No. 2	16.00 to 16.50

WROUGHT PIPE

Boston (dealers)	11.50 to 12.00
Buffalo	13.50 to 14.00
Eastern Pennsylvania	15.00 to 16.00
New York (dealers)	10.50 to 11.00

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.00 to 17.00

CITY WROUGHT

New York, long	15.00 to 15.50

BUSHELING

Buffalo	16.50 to 17.00
Chicago, No. 1	13.75 to 14.50
Chicago, No. 2	9.75 to 10.25
Cincinnati, No. 1	10.50 to 11.00
Cleveland, No. 1	11.50 to 12.00
Cleveland, No. 2	10.00 to 10.50
Detroit, No. 1	11.50 to 12.00
Detroit, No. 2 (new)	12.50 to 13.00
Detroit, No. 2 (old)	9.50 to 10.00
Eastern Pennsylvania	15.50 to 16.00
Pittsburgh, No. 1	16.00 to 16.50
St. Louis, No. 1	15.50 to 16.00

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (dealers)	10.00 to 10.50
Buffalo	11.50 to 12.00
Chicago	9.50 to 10.00
Cincinnati	9.00 to 9.50
Cleveland	13.25 to 13.75
Detroit (dealers)	10.50 to 11.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.00 to 11.50
Pittsburgh	14.50 to 15.00
St. Louis	10.00 to 10.50
Valleys	13.25 to 13.75

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	9.00 to 10.00
Boston (chemical)	12.00 to 12.25
Boston (dealers)	11.00 to 11.50
Buffalo	13.50 to 14.00
Chicago	13.50 to 14.00
Cincinnati	10.00 to 10.50
Cleveland	13.50 to 13.75
Detroit (dealers)	11.00 to 11.50
Eastern Pennsylvania (chem.)	17.00 to 18.00
Eastern Pennsylvania	15.00 to 15.50
New York (dealers' price)	11.50 to 12.00
Pittsburgh	15.00 to 15.50
St. Louis	11.50 to 12.00
Valleys	14.00 to 14.25

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	10.00 to 10.50
Cleveland	13.50 to 13.75
Detroit (dealers)	11.00 to 11.50
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.25 to 11.75

IRON AXLES

Birmingham	21.00 to 21.50
Boston (consumers)	31.00 to 32.00
Buffalo	28.00
Chicago	30.00 to 30.50
Cincinnati	21.50 to 22.50
Eastern Pennsylvania	26.00 to 28.00
New York (dealers)	25.75 to 26.25
St. Louis	30.50 to 31.00

IRON RAILS

Buffalo	20.00 to 21.00
Chicago	19.00 to 19.50
Cincinnati	13.50 to 14.00
St. Louis	16.00 to 16.50

PIPES AND FLUES

Chicago	11.00 to 11.50
Cincinnati	9.00 to 9.50
Cleveland	10.25 to 10.75
St. Louis	11.50 to 12.00

RAILROAD GRATE BARS

Buffalo	16.50 to 17.00
Chicago	17.00 to 17.50
Cleveland	15.25 to 15.75
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	14.00 to 14.50
St. Louis	18.00 to 18.50

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Chicago, small	12.00 to 12.50
Cleveland (under 10 in.)	11.25 to 11.50
Cleveland (over 10 in.)	10.00 to 10.25
Detroit (dealers)	11.00 to 11.50

FORGE SCRAP

Boston (dealers)	10.50 to 11.00
Chicago	19.00 to 19.50
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	20.50 to 21.00
St. Louis	24.00 to 24.50

ANGLE BARS—IRON

Chicago	19.50 to 20.00
St. Louis	23.00 to 23.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	11.00 to 11.50
Buffalo	15.00 to 15.50
Chicago	14.25 to 14.75
Cleveland	14.75 to 15.00
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	18.00 to 18.50
St. Louis	14.00 to 14.50

STEEL CAR AXLES

Birmingham	19.00 to 20.00
Boston (consumers)	20.00 to 21.00
Buffalo	21.00 to 22.00
Chicago	20.50 to 21.00
Cleveland	20.00 to 20.25
Eastern Pennsylvania	22.00 to 23.00
Pittsburgh	20.50 to 21.00
St. Louis	22.00 to 22.50

SHAFTING

Boston (consumers)	21.00 to 22.00
Chicago	21.00 to 21.50
Eastern Pennsylvania	21.00 to 23.00
New York (dealers)	18.50 to 19.00
St. Louis	22.00 to 22.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	17.00 to 18.00
Birmingham, iron	16.00 to 17.00
Boston (consumers)6	20.00 to 20.50
Buffalo	20.00 to 20.50
Chicago, iron	18.50 to 19.00
Cincinnati	13.00 to 13.50
Eastern Pennsylvania	18.50 to 19.50
New York iron (dealers)	15.75 to 16.25
Pittsburgh, iron	20.00 to 20.50
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	20.50 to 21.00

NO. 1 CAST SCRAP

Birmingham, cupola	20.00 to 21.00
Boston (consumers)	22.50 to 23.00
Buffalo	20.00 to 20.50
Chicago, cupola	20.50 to 21.00
Cincinnati No. 1 machinery cupola (net tons)	18.00 to 18.50
Cleveland, cupola	20.50 to 21.00
Detroit (net tons) (dealers)	17.50 to 18.00
Eastern Pennsylvania, cupola	19.00 to 20.00
New York, cupola (dealers)	16.50 to 17.00
Pittsburgh, cupola	19.50 to 20.00
San Francisco	25.00 to 26.00
St. Louis, railroad	21.50 to 22.00
St. Louis, agricultural	21.00 to 21.50
Valleys	20.75 to 21.00

HEAVY CAST

Boston (consumers)	19.00 to 19.50
Buffalo (breakable)	16.50 to 17.00
Cleveland	13.50 to 14.00
Detroit (automobile) (net ton)	23.50 to 24.00
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	15.50 to 17.00
Pittsburgh	17.50 to 18.00

MALLEABLE

Boston (railroad)	19.00 to 20.00
Buffalo	21.00 to 21.50
Chicago, railroad	20.50 to 21.00
Chicago, agricultural	19.25 to 20.25
Cincinnati, agricultural	14.00 to 14.50
Cincinnati, railroad	18.50 to 19.00
Cleveland, agricultural	19.00 to 19.25
Cleveland, railroad	19.25 to 19.75
Detroit (dealers)	18.00 to 18.50
Eastern Pennsylvania, railroad	17.00 to 18.00
Pittsburgh, railroad	18.50 to 19.00
St. Louis, agricultural	18.00 to 18.50
St. Louis, railroad	18.25 to 18.75

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	17.00 to 17.50
Boston (dealers)	16.00 to 16.25
Chicago	18.25 to 18.75
Cleveland	18.00 to 18.25
Detroit	15.50 to 16.00
Eastern Pennsylvania	19.00 to 20.00
New York (dealers)	17.50 to 18.00
Pittsburgh district	21.50 to 22.00
St. Louis	18.00 to 18.50

LOCOMOTIVE TIRES

Chicago	17.50 to 18.50
St. Louis	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

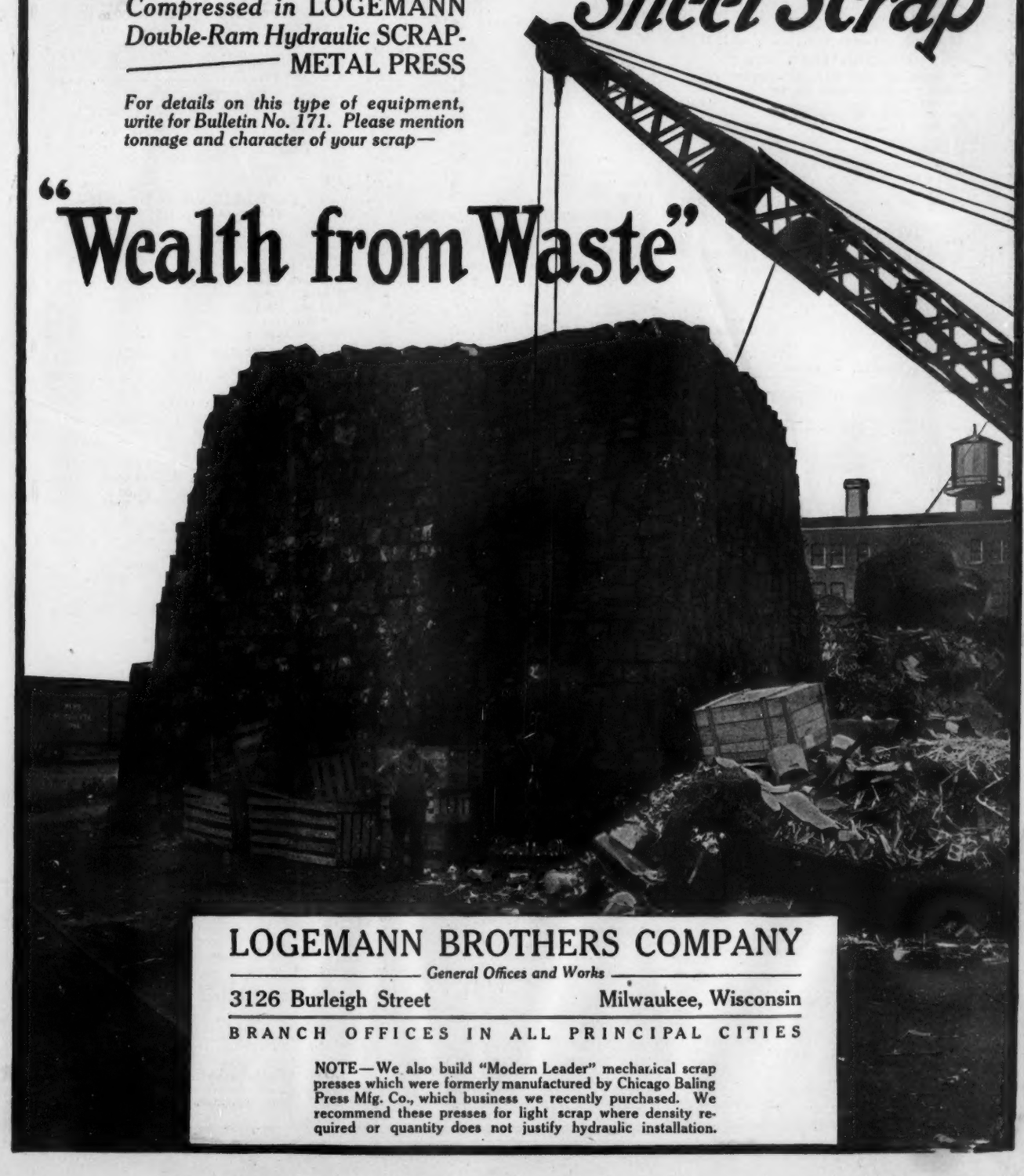
Chicago	17.75 to 18.25
Eastern Pennsylvania	23.00 to 24.00
Pittsburgh	22.00 to 22.50

Almost 2000 Tons - of "LOGEMANN HYDRAULIC-COMPRESSED" Sheet Scrap

Compressed in LOGEMANN *Double-Ram Hydraulic* SCRAP-METAL PRESS

For details on this type of equipment, write for Bulletin No. 171. Please mention tonnage and character of your scrap—

"Wealth from Waste"



LOGEMANN BROTHERS COMPANY

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BRANCH OFFICES IN ALL PRINCIPAL CITIES

NOTE—We also build "Modern Leader" mechanical scrap presses which were formerly manufactured by Chicago Baling Press Mfg. Co., which business we recently purchased. We recommend these presses for light scrap where density required or quantity does not justify hydraulic installation.

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron.$6.45
Mesabi bessemer, 55 per cent iron.... 6.20
Old Range nonbessemer, 51½ per cent iron 5.70
Mesabi nonbessemer, 51½ per cent iron 5.55

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent ..... 10.00 to 11.00
Copper free low phosphorus 53 to 65 per cent ..... 13.25 to 16.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent ..... 9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent ..... 10.00 to 10.50
Swedish and Norwegian low phosphorus, 68 per cent.... 11.00 to 12.00
Swedish foundry or basic, 66 to 68 per cent ..... 9.25 to 10.00
Spanish foundry or basic, 50 to 54 per cent 9.00

Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.....
.....nominal 44 cents c.i.f. tidewater
Indian, minimum 47 per cent.....
...nominal 44 to 44½ cents c.i.f. tidewater
Caucasian, 53 to 55 per cent.....
.....Ordinary, 42 cents, c.i.f. tidewater
.....Washed, 45 cents, c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton.$20.00 to 21.00
Washed gravel, imported, duty paid eastern tidewater, per gross ton ..... 20.60 to 21.10

Rivets

Structural rivets, C. L. Pitts.. 2.70c to 2.75c
Structural rivets, L.C.L. Pitts..... 2.90c
Rivets, 7/16-in. and smaller.....
.....65, 10 and 5 to 70 and 10 off

Nuts and Bolts

(Up to 1¼ and 1⅜ inches inclusive)

Hot pressed square or hexagon blank .....$4.25 off list
Hot pressed square or hexagon tapped .....$4.25 off list
Cold punched square or hexagon blank .....$4.00 off list
Cold punched, square or hexagon.... .....$4.00 off list
Cold punched semifinished hexagon nuts ⅝-inch and larger.....75 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller.....80 and 5 off
Price f.o.b. Pittsburgh, packages of 50.

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread .....60 and 5 off
Cut thread .....50, 10 and 5 off
Larger and longer.....50, 10 and 5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread .....60, 10 and 5 off
Cut thread .....60 and 5 off
Larger and longer.....60-10 to 60-5 off

(⅜ x 4 inches, cold punched nuts)

Cut thread .....50, 5 off
Larger and longer .....50, 5 off
Lag screws .....65 and 5 off
Plow bolts Nos. 1, 2 and 3 heads.... ..... 50 and 10 off
4 to 10 heads .....50-10 + 20 off
Flat and round head stove bolts..... ..... 75, 10 and 5 off
Other stove bolts .....75 and 5 off
Tap bolts .....25 and 10 off
Bolt ends with hot pressed nuts..... .....60 nd 5 off
Bolt ends with cold punched nuts.... .....50 and 5 off
Blank bolts .....60 and 10 off
Rough stud bolts with nuts..... .....45 and 5 off

Washers

Wrought washers .....$5.25 to $5.50 off

Steel Pipe

(Effective April 19, 1923)
Pittsburgh basing discounts, jobbers' carloads.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

(Effective Jan. 23, 1923)
Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS

Butt Weld

⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED
Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld

⅛ and ¼-inch	+19	+54
⅜-inch	21	7
½-inch	28	12
¾-inch	30	14
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL (Lap welded)
(Effective April 19, 1923)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON
(Effective April 12, 1923)

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	— 3
3¼ to 4½-inch	— 8

SEAMLESS COLD DRAWN
(Effective April 19, 1923)

1-inch	51 off
1¼ and 1½-inch	43 off
1¾-inch	27 off
2 and 2¼-inch	18 off
2½ and 2¾-inch	28 off
3 and 3¼-inch	32 off
3½ and 3¾-inch	33 off
4-inch	37 off
4½ and 5-inch	29 off

SEAMLESS HOT ROLLED

3 and 3¼-inch	34 off
3½ and 3¾-inch	35 off
4-inch	39 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts

Carbon, 0.10 to 0.20 per cent.....	83 off
Carbon, 0.30 to 0.40 per cent.....	81 off
Carbon, 0.40 to 0.50 per cent....net price	

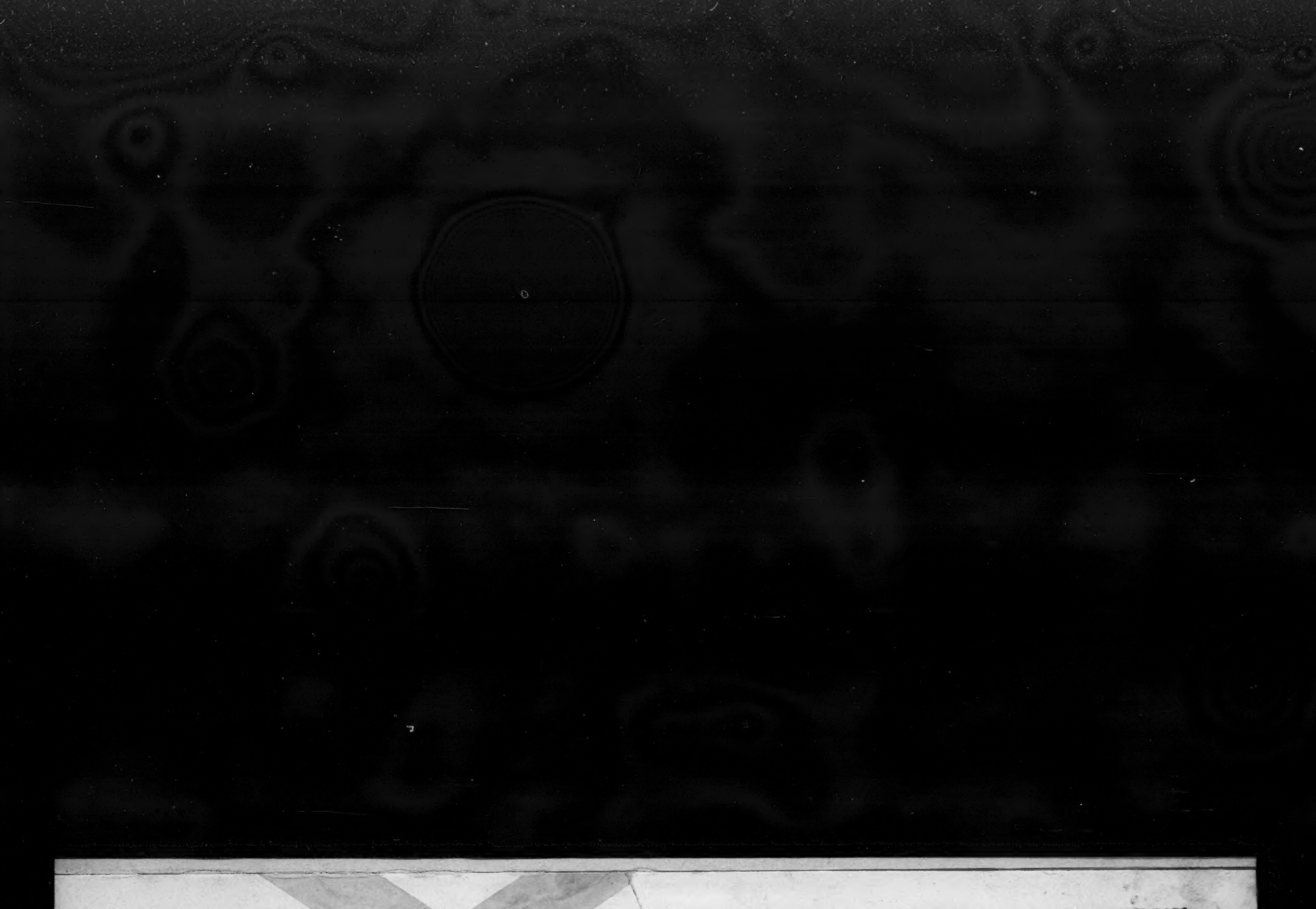
Plus differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES
(Effective April 19, 1923)

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	15c
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

Hot Rolled Alloy Steels

Prices per pound, Pittsburgh

S. A. E. Series—	
2300 (3½ per cent nickel)...	5.00c
3100 (nickel chromium).....	4.25c
6100 (chrome vanadium).....	5.00c
6100 (chrome vanadium spring)	4.75c
9250 (Silico manganese spring)	4.00c to 4.25c